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Reframing Ethical Guidance for the Management of Large Patient Data Sets

An approach inspired by Ricœur's 'little ethics'

INAUGURAL-DISSERTATION

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For Graham,

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Abbrevations

art. : article

ch: chapter

CRG: Clinical registries

DoH: Declaration of Helsinki

EHR: Electronic health records

ELSI: Ethical, legal and social implications

GP: General Practitioner

HCP: Healthcare professionals

ICESCR: International Covenant on Economic, Social and Cultural Rights

IOM: Institute of Medicine (USA)

IT: Information technology

p. : page (pp. pages)

Para: paragraph

PMI: Precision Medicine Initiative

Reps : representatives

RS: (Recueil systématique du droit fédéral). Classified compilation of Swiss Federal Acts

UDHR: Universal Declaration of Human Rights

WHO: World Health Organisation

WMA: World Medical Association

Foreword

Why Paul Ricœur? The question kept coming up, throughout my PhD journey, so I have decided to use this foreword to explain the reasons behind my choice. Ricœur's philosophy is too often dismissed as dense and difficult to understand. Whilst his oeuvre is certainly intense, and richly detailed, this is owing to the perpetual justification, revision and development of his arguments, in consideration of philosophical trends, past and present. I see him as a philosopher with a clear vision of justice, who cared for each individual, and for humanity as a whole.

Regarding the digital revolution of health information. I begin with an ontological view of health-related data, originating from the patient, i.e. patient data. However, there is a potential tension between individual rights and public interest, as the management of this data could benefit either patients as donors, or the population as a whole.

Randomised control trials in clinical research provide the classical example of this tension, as the patient gives up some of their rights, without directly benefiting, whilst society gains from the research. Traditionally, this tension is addressed by legal norms and bioethics principles. However, this approach is under increasing scrutiny, as patient data is required for more sophisticated processing and secondary uses, in the new era of genomics and big data. Although traditional frameworks can address ethical issues with patient data in the individual context of clinical research, public health or clinical care, no single set of principles can address the whole field of the production and use of patient data. Moreover, there is no coherent normative justification for combining these frameworks. In contrast, Ricœur's 'little ethics' would provide an overarching framework capable of overcoming this potential tension and incoherence.[1] Early on, Ricœur foresaw the "colonisation" of the medical act, following genetic and biologic advances and the subsequent risk of objectifying the patient. He grounded his ethical reflection through his work on narrative identity and the concept of agency as the "homme capable" of suffering, acting and having concerns for others.[2]

The management of patient data can thus be considered as a narration with character-stakeholders as agents being accountable and capable of self-reflection. The reflection would start from the patients (data donors) in relation to other stakeholders (receivers). The

[1] Ricœur, P. 1992. *Oneself As Another* (trans: Blamey, K.). Chicago and London: The University of Chicago Press, ch 7,8,9. Originally published as *Soi-Même Comme un Autre.* 1990. Paris: Editions du Seuil.
[2] Ricœur, P. 2007. *Reflections on The Just* (trans: Pellauer, D.). Chicago and London: The University of Chicago Press, pp. 45-57. Originally published as *Le Juste 2*. 2001.Paris: Editions Esprit.

production of patient data and its subsequent use should not be dissociated in ethical analysis. Nor should patients be separated into biological, psychological and social parts. Furthermore, stakeholders are worth more than just their actions, as their capability covers acting and "speaking", by translating the Ricœur's ethical aim of a "good life, with and for others, in just institutions" into practice. The negative side of capability is vulnerability. Vulnerability impedes the possibility to translate capability into practice, creating distance from others, with incommunicability and hostility.[3] It is interesting to note that Ricœur did not take the level of competence as the starting point, to define a patient's decision-making capacity with vulnerability as the limitation of this competency. Ricœur's notion of vulnerability and distance allows respect and intimacy to be reconciled. In other words, (and this applies to the management of patient data), an appropriate distance between the donor and the receiver reconciles the responsibility for oneself and the accountability for others, whilst introducing the supremacy of justice: "*the move from narrative identity to justification resolves the seeming paradox that effects one's encounter with global justice*."[4]

The translation of philosophy into political action and practice was a central theme for Ricœur. His 'little ethics' must not be understood as "little" in terms of philosophical depth. "Little" refers to translation in opposition to metaphysical philosophy. Ricœur has himself applied 'little ethics' to the medical domain, showing the way towards a wise management of patient data.[5] His approach combines an ethics of care with an ethics of justice. This is essential for the fair governance of patient data, as it allows for wider social benefits, whilst strengthening the patient's capability to act and speak i.e. the patient's voice should be listened to.

I hope that I have "translated" my appreciation for Ricœur, and that you can take note of his approach as you read this dissertation.

[3] Jervolino, D. 2008. Rethinking Ricœur: The unity of his work and the paradigm of translation. In *Reading Ricœur*. David M. Kaplan ed. Albany: State University of New York Press, ch 13, pp. 230-234.
[4] Rasmussen, D.M. 2008. Justice and interpretation. In *Reading Ricœur*. David M. Kaplan ed. Albany: State University of New York Press, ch 12, p. 220.
[5] Ibid note 1, pp. 198-212.

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EXECUTIVE SUMMARY

The starting point for this dissertation is the development in the healthcare system of large patient data sets that are changing biomedical research and medical practice thanks to scientific and technological advances. The management of this flourishing health information is expected to lead to important benefits in cure and care for the patients. There is therefore a public interest to develop large patient data sets, but also a public duty to respect patient rights. This raises fundamental ethical issues, as it is necessary to find an adequate balance between the gain from public interest and any morally acceptable overriding of patient rights. The situation is complex and an overly simplistic approach to the competing framework of public interest and patient rights can create difficulties and doubt. This PhD dissertation thus poses and addresses the following question:

How to appraise the issues raised from the tension between patient rights and public interest in the management of large patient data sets?

The dissertation examines different experiences on how patient data are produced and used in the domain of clinical registries. It also reports on a qualitative study seeking at a better understanding of the ethical awareness of healthcare providers, health administrators and policy makers with regard to the patient data they contribute to collect and use. Based on the results of this empirical material, it is my assertion that neither public interest nor patient rights are optimally respected. A traditional framework balancing principles and ethical theories of utilitarianism and Kantian-deontology is not appropriate to handle the multidisciplinary, technological and changing context of patient data. An overarching perspective that could ensure social benefits while strengthening patient rights would be preferable. Using a narrative approach, it is possible to consider the plurality of stakeholders' needs in different contexts and for various purposes with patient data. The resulting mattering map would allow a common harmony to emerge under appropriate ethical governance.

In order to facilitate the transition from narration to ethics, the report draws upon the passage by interpretation and the concept of narrative identity as defined by Paul Ricœur. Narrative identity transforms a passive character into an active one, an agent capable of acting and of being accountable for his or her own actions. Agency expresses itself through the narrative individual and collective identities. Therefore, narrative theory serves as mediation between the theory of action and the theory of ethics. Ethics is not about the identity of things (data) but about moral agents (healthcare stakeholders). With regard to patient data, individual,

collective and historical narrations are reconciled around agents' common ethical aim. Thereafter, appropriate governance for patient data can be developed at the medical, biomedical and public health levels, following the norms of autonomy, respect for others and justice. Conflicting norms are resolved by recourse to the common ethical aim.

The conclusion explains the new framework, and the importance of the "Ricœurian" principles of imputability and intentionality for a wise management of large patient data sets in practice. The dissertation then provides some recommendations for enhancing the stakeholders' ethical awareness and accountability, and for opening up governance of healthcare information to representatives of society as a whole.

PART I. INTRODUCTION

1. Stating the problem

The production and use of patient data provide social benefits

A wide range of stakeholders uses patient healthcare data for a variety of different purposes, and this picture is continuously evolving. It is claimed that big data will improve healthcare quality and efficiency.[6] Following advances in knowledge generation and dissemination, health-related data has increased in volume, velocity and also variety with medical text-based documents and non-medical social data. To keep pace with the digitalisation of the health system, healthcare information needs the expertise of professionals from bioinformatics and the biomedical sciences, as well as the possibility to develop public-private partnerships. These transformations lead to changes in health professionals' practices and in the relationships of healthcare providers to patients and healthcare consumers.

Managing patient data raises fundamental ethical issues

Healthcare stakeholders may experience difficulties addressing the ethical, legal and social implications (ELSI) of evolving healthcare information, and the literature reports on this.[7] From the start, my research identified some inconsistencies. First, patients could take on a more active role regarding their health-related data and corresponding rights as their awareness and understanding of medical information increases. Yet, their capacity to intervene and claim rights in the healthcare system could de facto be limited by the development of data linkages able to deliver patient data without having to involve patients directly. Second, healthcare professionals and policy-makers are confronted with the challenge of understanding and contributing to the utility and meaning of large patient data sets whilst appraising their obligations towards patient rights. To sum up, all healthcare stakeholders are faced with the urgent need to find an adequate balance between the expected social benefits and any morally acceptable infringement[8] of patient rights.

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[6] Murdoch,T.B., Detsky, A.S. 2013. The inevitable application of big data to health care. *Journal of American Medical Association*, 309(13):1351-1352.

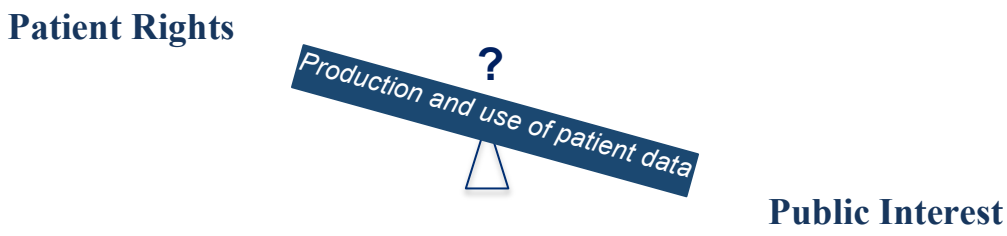
[7] Morrison, M., Dickinson, D. and Lee S. S-J. 2016. Introduction to the article collection 'Translation in healthcare: ethical, legal, and social implications'. *BMC Medical Ethics*, 17:74.

[8] *I used the word infringement as defined by Beauchamp and Childress, i.e. «a justified action overriding a right» in opposition to violation. This was a point of divergence between American authors and Swiss bioethicists. I will use from now on the word overriding instead of infringement for this work for the University of Zürich, (see p.22).*

Showing the social value of research to justify clinical trials has already been recognised.[9] With the expansion of the concept of research towards the activities of quality improvement, evaluation of health services and secondary uses of stored patient data and samples, some authors have also stressed the importance of social benefits in most of these new research circumstances, and acknowledged that it was often justified to waive informed consent because obtaining consent was impractical or because they judged that overriding patient rights had no moral gravity.[10] The WMA (World Medical Association) in re-examining the case of large health data sets and biobanks, has further widened the perimeter of research with commercial, administrative or political activities related to health databases, and stated that all these projects should be governed by the ethical principles of biomedical research. This includes in particular their contribution to the benefit to society (article 8) and the respect of the dignity, autonomy, privacy and confidentiality of individuals (article 9).[11]

All these developments represent a growing body of evidence suggesting that healthcare stakeholders need to be aware of their moral obligations in balancing public interest and patient rights when they decide to collect, use or store patient data. Figure 1 illustrates the dilemma with the risk that patient rights could be disregarded, following an exaggerated weight on public interest. This suggestion does not exclude other risks, such as the case where public interest might be neglected despite patients' consent. The model of balancing is by definition in search of equilibrium, namely unstable.

Figure 1: Competing framework[12]



[9] Emanuel, E.J., Wendler, D., Grady, C.. 2000. What makes clinical research ethical? *JAMA* 283(20):2701-2711.
[10] Gelinas, L., Wertheimer, A., Miller, F.G. 2016. When and why is research without consent permissible? *The Hastings Center report* 46(2):35-43.
[11] WMA, World Medical Association. 2016. *Declaration of Taipei on Ethical Considerations Regarding Health Databases and Biobanks*. https://www.wma.net/policies-post/wma-declaration-of-taipei-on-ethical-considerations-regarding-health-databases-and-biobanks/. Accessed 20 January 2017.
[12] *I used the word competing for the framework based on the traditional model of balancing interests or principles. Competing does not describe the process of balancing. It illustrates rather the result of balancing, as one side of the balance will get more weight and gain from decision-making in its favour.*

Issues raised under a competing framework between patient rights and public interest

Beauchamp and Childress insist on the necessity to reduce intuition, partiality and arbitrariness in applying the model of balancing. They thus propose a set of constraining conditions to justify the act of overriding a *prima facie* norm.[13] The statement of the dilemma seems clear, as public interest should deliver expected benefits, and overriding rights should be justified.[14] However, establishing the equilibrium in Figure 1 remains complex, as there are neither clear-cut definitions nor easy measurements of public interest and patient rights. Patients also have stakes on both side of the balance. They are both individual right-bearers and citizens who are part of the public. Moreover, ethical reflection may also be disturbed by the sense of urgency induced by the booming rhythm of technological progress and the significant human and financial investments attached to their developments. Initiatives in favour of big data health networks and precision medicine projects have expanded worldwide[15,16]. Following Jonas on the technological age, the question of the force of the future in the present needs to be raised.[17] The emphasis put on the weight of public interest would need legal and ethical evaluations.

On the legal side, each country has strict criteria for judging the permissibility of restricting fundamental patient rights. For instance, the fundamental right of privacy could be restricted by the use of quarantine for serious infectious diseases. However, public interest is rarely so obvious or immediate. Additionally, patient rights can be interpreted differently depending on the national legal context or institutional rules.

On the moral side, the justification of public interest may involve controversial theories of justice. Moreover, patient rights entail loosely defined concepts such as those of autonomy, privacy, functioning, agency or human dignity. This heterogeneity renders more complex the deliberation on a consensual ethical guidance for healthcare stakeholders. Traditional principle-oriented approach to ethical decision-making may be subject to bias following partial evaluation of social benefit, autonomy, potential harm or justice.

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[13] Beauchamp, T.L. and Childress, J.F. 2009. *Principles of biomedical ethics*, 6th ed. New York: Oxford University Press, p. 23.
[14] Ibid, p. 352.
[15] Collins, F.S., Varmus, H. 2015. A new initiative on precision medicine. *New England Journal of Medicine*, 372(9):793-795.
[16] European Alliance for Personalised Medicine. 2014. http://euapm.eu/pdf/EAPM_A_Europe_wide_data_ecosystem_for_personalised_medicine_A_proposal_for_a_Lighthouse_Initiative.pdf. Accessed 20 January, 2016.
[17] Jonas, H. 1984. *The Imperative of Responsibility. In Search of an Ethics for the Technological Age*. Chicago & London: The University of Chicago Press. Paperback Edition.1985. pp. 21-22.

Reframing the issue through Ricœur's approach

Applying the model of balancing is therefore difficult. It relies on the principle of proportionality to assess the permissible level of overriding patient rights in order to obtain public interest. This means choosing the minimal restriction of patient rights to reach the goal of public interest. Proportionality on the legal side corresponds to the moral justification of overriding *prima facie* norms, as presented above. Legal and ethical aspects are linked in the concept of proportionality. The pressing issue of balancing is therefore pushed to the question of how proportionality could be judged fairly and what governance would be appropriate to make this judgement. The question to pose and address is:

How to appraise the issues raised from the tension between patient rights and public interest in the management of large patient data sets?

I think that the issue with proportionality reveals the difficulties and doubts behind a solution based on a traditional perspective of the production and use of patient data in the healthcare system. I argue that it is necessary to move away from the tension of a model based on facilitating the gain of public interest whilst trading off some patient rights. Ideally, the production and use of patient data should benefit public interest and strengthen patient rights. In the long term, such a perspective could promote the development of more and safer social benefits. Consequently, I propose to base our ethical reflection on Paul Ricœur's 'little ethics'. This leading French philosopher himself developed an ethical approach to medical and judicial judgements.[18] I consider that his ethics established on his specific concept of narrative identity, facilitates a reframing of the ethical guidance for patient data management, shifting from a competing framework towards an ethics of justice and reconciliation between individual and public interests.

In the following I shall explain how I use the terms *patient data*, *public interest* and *patient rights* in this PhD dissertation.

[18] Ricœur, P. 2007. *Reflections on the Just* (trans: Pellauer, D.). Chicago and London: The University of Chicago Press, pp. 213-222. Originally published as *Le Juste 2*.2001. Paris: Editions Esprit.

2. Defining the main concepts of patient data, public interest and patient rights

I have chosen the term *patient data* to distinguish the patients' health-related data from the *patient information* considered as the information given to patients to help them understand their health status in order to make informed decisions. Patient data is included in the concept of health information management defined as the "*management of the acquisition, organization, retrieval, and dissemination of health information*" (Medline 2013). Large patient data sets result from the aggregation of patient data. The data is measured, collected, stored, protected and used by healthcare stakeholders who have roles and responsibilities regarding the creation and management of health data. These *healthcare stakeholders* regroup patients, healthcare providers (physicians, nurses, pharmacists, other care givers in primary or stationary care, private or public institutions), researchers, and experts in bioinformatics, policy-makers, lawyers and decision-makers. Healthcare providers refer to physicians, healthcare professionals in primary care and stationary care, and also hospitals, private and public institutions providing health services to patients and citizens. In this dissertation, different stakeholders' perspectives have been considered, and the term *health(care) professional* has been used for simplification when patients were not concerned. Additionally, depending on the context, the term *physician* potentially covers different situations, such as being the treating physician of the patient, a first-line clinician collecting patient data, a physician with multiple responsibilities of investigator, researcher or scientific advisor.

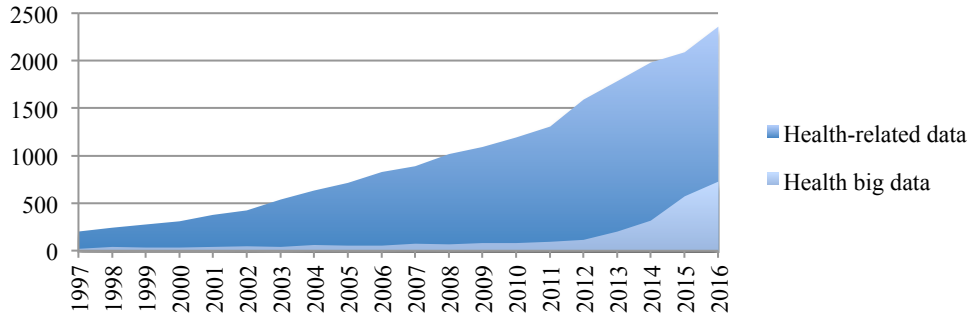
All the stakeholders have rights and obligations towards each other in order to leverage benefits and reduce burdens and harm when dealing with patient data. Traditional medical judgement has evaluated the benefit-risk ratio of patient data management in a well-delimited clinical context. With the development of large patient data sets integrating data from routine clinical care, research and other databases, the medical judgement develops beyond the context of the patient–physician relationship, taking into account the interventions of researchers, sponsors, IT experts, funders, and policy-makers. The management of patient data has therefore broadened its clinical scope with biomedical research combined with observational research, clinical trials, biobanking and epidemiological studies, as well as with more administrative and economical evaluation of the healthcare system.

Patient data

Importance of health information and patient data

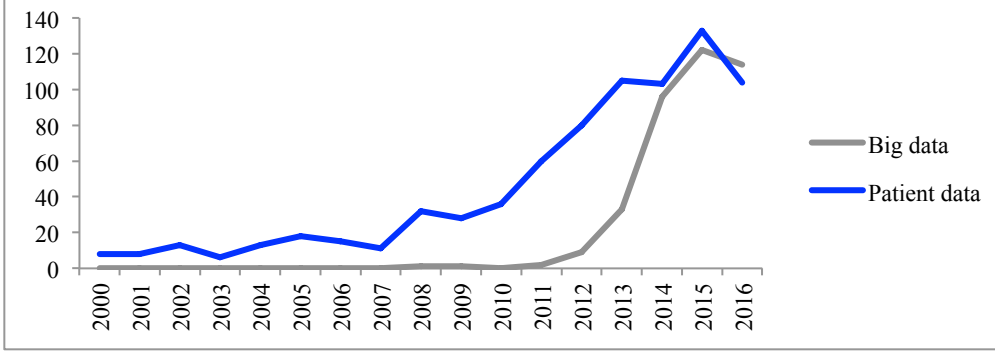
Van Rensselaer Potter, who first used the term bioethics in 1971, indicated the necessity to bridge science and philosophy with wisdom in order to acquire the *"knowledge of how to use knowledge"*.[19] In practice, it is difficult to have complete knowledge in health. The WHO definition of health *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"* is so large that the required information to serve better health appears almost without limit. The WHO definition of health was contemporary to the Universal Declaration of Human Rights after the Second World War. Legal and ethical considerations were thus influencing scientific and political statements. Callahan at an early stage challenged the wideness of this definition, especially its mental and social attributes.[20] His quote about the *"fervent faith in the possibilities of medical science to achieve world health, enhanced by the development of powerful antibiotics and pesticides during the war"* seems comparable to the current fervent faith in medical sciences, genomics and bioinformatics to achieve better health. In the healthcare domain, the increased dissemination of information has also revealed the dark side of medicine in terms of safety[21] and the need for better quality[22]. Modern information technology offers tools that could fill the gap in our ignorance. As the bibliometric curves in Figures 2 and 3 show, health-related data, patient data and health big data have gained in importance in the recent years, and especially since the years 2012-2013. The increasing volume and variety of health-related data, potential data linkages and data uses was, and is, obviously changing the healthcare system.

Figure 2: Pubmed bibliometrics (accessed March 30, 2017)



[19] Henk A.M.J. ten Have, 2012. Potter's notion of bioethics, *Kennedy Institute of Ethics Journal*, 22(1):59-82.
[20] Callahan, D. 1973. The WHO definition of "health". *The Hastings Center Studies,* 1(3):77-87.
[21] IOM (Institute of Medicine).1999. *To Err is Human: Building a Safer Health System*. Washington, DC: The National Academies Press.
[22] IOM (Institute of Medicine). 2001. *Crossing the Quality Chasm, A New Health System for the 21st Century.* Washington, DC: The National Academies Press.

Figure 3: Pubmed titles (accessed February 23, 2017)



The patient-physician relationship is impacted by the development of patient data, as information technology appears as a third "partner" in the medical judgement. For instance, the IBM's Watson computer is able to analyse patient data better than physicians[23]. In neurology, brain-computing interfaces are challenging the concepts of agency and accountability for patients and physicians.[24] Therefore, the necessity to bridge science and philosophy with wisdom applies to the management of patient data in clinical care and research, i.e. and paraphrasing Potter, there is a necessity to develop "*information about how to use information*".

Definition of patient data

Patient data are health-related data coming from healthcare and biomedical research settings. In its report on healthcare and biomedical data, the Nuffield Council on Bioethics has included the following categories of data[25]:

- Clinical care data (e.g. primary care and hospital records)
- Data from clinical trials and observational studies
- Patient-generated data (e.g. from 'life logging' or consumer genetic testing)
- Laboratory data (e.g. from imaging, biobanking, genome sequencing and other 'omics')
- Administrative data or metadata

The Nuffield Council distinguishes between the data produced by observation or measurement (raw materials) and the data used in different contexts (information value).[26] It

[23] Doyle-Lindrud, S.2015. Watson will see you now: A supercomputer to help clinicians make informed treatment decisions. *Clinical Journal of Oncology Nursing*, 19(1):31-32.
[24] Kellmeyer, P., Cochrane, T., Müller, O., Mitchell, C., Ball, T., Fins, J. J., Biller-Andorno, N. 2016. The effects of closed-loop medical devices on the autonomy and accountability of persons and systems. *Cambridge Quarterly of Healthcare Ethics*, 25(4):623-633.
[25] Nuffield Council on Bioethics. 2015. *Biological and health data: The collection, linking and use of data in biomedical research and health care: ethical issues*, p. 4. http://nuffieldbioethics.org/report/collection-linking-use-data-biomedical-research-health-care/chapter-downloads-2/. Accessed 17 April 2017.
[26] Ibid, p. 5.

also recognises that its task *"was complicated by the fact that we built on shifting sands."*[27] This sentence confirms the fast-evolving field of health-related data and the importance of explaining each working definition.

In this dissertation, the concept of patient data regroups the two aspects of production and use of patient data. On the production side, technological progress in data processing, storage, retrieval and linking of datasets is building health big data sets, characterised by high volume, variety, velocity and value. Unstructured sources of patient data, e.g. text forms, can be translated and integrated into patient datasets. On the usage side, secondary uses of recombined patient data are susceptible to endless exploitation in the absence of legal and ethical limitations. This PhD research concentrates on *the patient data produced and used in the healthcare system, usually generated in the patient-physician relationship, and used for medical, research, commercial, administrative or political purposes*. Patient data produced and used independently from this system, such as most life-logged data, might require a specific, different reflection. Patient data that is the subject of this dissertation includes data from the (electronic) patient record but is not restricted to it, as patient data could be collected and used outside the patient record following a legal mandatory data collection, or specific clinical trials.

Patients and their first–line clinicians are directly involved in the production and use of patient data, but new healthcare incumbents are increasingly involved too, in particular experts in non-clinical areas such as electronic health records, bioinformatics or genomics. The resulting "data-based medicine" is different from the traditional empirical medicine based on observation and from the evidence-based medicine based on hypothesis testing. There is a data mining approach to research, precision medicine and healthcare comparative effectiveness assessment that is transforming the health model into a continuously learning system focusing on value and the benefit-cost ratio. Consequently, sharing and combining diverse sources of patient data can become a source of benefits for society.

Data ownership

An important question is therefore what the just distribution of benefits could be, and the corollary question is to whom does the data belong. Data ownership is understood as the possibility to collect and use the data, i.e. in terms of privacy rights and not of property rights. International law does not directly consider patient data ownership. Neither does Swiss law. What is considered is rather the patient right to decide without constraint what could be the destiny of her/his personal data (see section on patient rights). Therefore, laws concentrate on

[27] Ibid, Nuffield report's foreword, p. VII.

data protection and not data ownership. For instance, Swiss cantonal laws regulate data protection in the relationship between patient and physicians working in the public cantonal institutions, whilst the Federal Data Protection Act regulates data between relationships between patient and physician in the private sector, and between patient and social insurances in the public sector.

Moreover, it is difficult to use a concept of individual patient data property as patient data does not carry the usual features of property for things. To be medically relevant for a patient, her/his data needs to be compared and aggregated with health-related data from several patients. The value of patient data comes from its collection, interpretation, storage and usage, and from the obligations that this data management generates. Therefore, a concept of stewardship by health professionals rather than a typical form of data ownership is appropriate.

However, data ownership is regularly discussed in biomedical literature and conferences, following the onset of new possibilities of commercial and intellectual property advantages. Patient privacy rights may no longer protect patient data. In practice, it is difficult to guarantee anonymity and confidentiality of patient data when it includes genetic information or linkage with other data sets. Patient data related to genomic information would indeed be preferably considered under a common regulated ownership. Nevertheless, new genomic sequencing may grant some private ownership rights to professional groups and private companies.[28] Kaplan also reports examples where the U.S. constitutional free speech protections have allowed the sale and use of patient prescription data.[29] Furthermore, data mining developments include the creation of innovative algorithms for processing patient data, and these algorithms may benefit from intellectual property rights, with patent protection. As a result, a feeling of despoliation may rise in patients, and also in first-line physicians collecting the patient data.

All these changes with patient data may redefine a new approach to data ownership that not only protects patient with privacy rights, but also develops positive claims to have full and transparent information about their data destiny, as well as the possibility to intervene. This assumes a sufficient level of literacy on health-related data and data processing methods. Therefore, similar to the concept of common data ownership mentioned above, a common ethical governance of patient data would be necessary.

This promise of social benefits thus necessitates a better understanding of the public interest attached to patient data management.

[28] Montgomery, J. 2017. Data sharing and the idea of ownership. *The New Bioethics,* 23(1):81-86.
[29] Kaplan B. 2015. Selling health data: de-identification, privacy, and speech. *Cambridge Quarterly of Healthcare Ethics*, 24(3):256-71.

Public interest

The concept of public interest

In this dissertation, the term *social benefits* is used in the sense of a better society to live in with regard to health issues, and not in its narrow economical definition of social transfers received by households. Social benefits are an expression of public interest. There is no absolute definition of public interest, but rather reasons for public interest and, consequently, potential justifications to limit individual and private rights. Political systems and political choices are used as reasons to justify public demands on other individuals and groups. In my interviews with Swiss national parliamentary representatives (empirical research of the dissertation, part III), I identified a political divide regarding the public interest reasons allegedly to be upheld. The political party on the right was limiting the public interest reason to a minimum of obligations insisting on liberty and privacy issues, whilst the socialist party preferred to expand social interventions and health agencies in the interest of public health and biomedical research. Political sciences as well as theories of economics, justice and ethics, influence public interest, the sphere of common good and the role of the state. It is acknowledged, therefore, that the public interest reasons rely not so much on a kind of absolute "truth", but rather on a consensual, shared commitment of public representatives, private groups and citizens to accept some degree of coercion over rights.[30]

Concerning the production and use of patient data, public and private interests are sometimes combined to leverage competencies and funding of large integrated data sets. In this dissertation, I have sometimes used the term public interests with an "s" to show the different interests able to benefit society. I have preferentially used public interest (singular) for the legal approach as indicated in the European Convention on Human Rights (CEDH): Article 8 on the right to respect for private and family life justifies a public authority's interference with this right when it is necessary in "*the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."*

Additionally, the word "public" not only refers to populations, but also indicates collective interventions by government (or other public institutions).[31] Public interests can thus indicate not only the benefits for society, but also beneficial returns on state interventions. For instance, using patient data to compare healthcare cost-effectiveness could be in the interest

[30] Quong, J. 2013. Public Reason. In *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta ed. https://plato.stanford.edu/archives/sum2013/entries/public-reason/. Accessed 25 April 2017.
[31] Verweij, M., Dawson, A. 2007. The meaning of „public" in „public health". In *Ethics, Prevention and Public Health*. Oxford: Oxford University Press, ch 2, pp. 13-29.

of the government and its aim of ensuring the sustainability of the healthcare system; yet, it might not be in the public interest of the society as a whole, with some populations running the risk of being stigmatised for their higher health costs, or of having to make increased out-of-pocket payments for their health in the absence of any consensual commitment or consent. However, the sum of individual interests is not equivalent to public interest. It is therefore important to understand the competing interests in patient data to evaluate the weight of public interest compared to patient rights.

Public interest reasons for sharing and using patient data

Sharing and using patient information can serve public health interests, but the extended development of scientific, commercial, administrative and political uses of patient data demonstrates the possibilities of larger social benefits. State government, health administration and public institutions want to stay in the competitive health information field for two main reasons. The first reason is to develop a modern and sustainable health system. To this end, programs have been proposed in most developed countries, for instance in the USA with the National Institute of Health (NIH) project of "Better health at lower costs" [32], and in Switzerland with the Health2020 project promoting a greater use of e-health and an improved availability and analysis of data to manage the health system more efficiently[33]. The second reason is related to the need to build innovation and competitive advantage in the flourishing domain of the medical sciences such as precision medicine and the concept of modern 4P medicine: preventive, prognostic, predictive and participatory. Generously funded projects are being developed. Following former President Obama's initiative on Precision Medicine (PMI), the NIH has started a PMI-cohort programme collecting and analysing health information from at least one million American volunteers *"thanks to advances in genomic technologies, data collection and storage, computational analysis, and mobile health applications"* [34]. Similarly in Switzerland, a national project of Swiss Personalized Health Network (SPHN) has been designed to *„create a national infrastructure allowing the sharing across Switzerland of patient data for research*".[35]

[32] IOM (Institute of Medicine).2012. *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America.* Washington, DC: The National Academies Press.
[33] Federal Office of Public Health (FOPH). 2013. *The Federal Council's Health-Policy Priorities, Health2020 Report.* http://www.bag.admin.ch/gesundheit2020/index.html?lang=en. Accessed 28 November 2016.
[34] Precision Medicine Initiative (PMI) Working Group Report to the Advisory Committee to the Director, NIH. 2015. *The Precision Medicine Initiative Cohort Program. Building a Research Foundation for 21st Century Medicine.* https://www.nih.gov/sites/default/files/research-training/initiatives/pmi/pmi-working-group-report-20150917-2.pdf. Accessed 28 November 2016.
[35] SPHN (Swiss Personalized Health Network) project. 2016. https://www.sib.swiss/services-infrastructure/personalized-health/swiss-personalized-health-network Accessed 28 November 2016.

In short, patient data can benefit society in the fields of clinical practice, public health and biomedical science. The realisation of these benefits necessitates an evaluation justifying the preeminence of public interest over other legitimate interests and rights.

Evaluation of public interest in patient data

Once the social benefits of sharing and using patient data have been recognised, it is important to reflect on the main factors driving the realisation of public interest. The evaluation of public interest is not always straightforward, and may be hindered by potential underlying conflicts of interests, such as advantages for academic careers or the pharmaceutical industry. When public interest in patient data results from competing reasons, it should undergo a fair evaluation of medical, scientific or economics factors, with transparency.

Accelerated by information technology, the social dimensions of scientific knowledge have become more complex. It is no longer possible for a single individual to control and evaluate the results of other team workers. Each contributor must trust others and have good reason to trust them. It has been documented that the power of interdisciplinary science prevails over individual lives.[36] Acceptance of new products or technologies is justified by the evaluation of scientific evidence and social and economic risk (e.g. precautionary principle), potentially at the expense of philosophical rationality (e.g. sense of prudence as practical wisdom). Consequently, the power to define and judge the value of public interest relies predominantly on social institutions, such as state government, legal systems, administrations, hospitals, scientific academies, and some private corporations. Hence, policy-makers are directly involved in organising the legal and financial frames establishing the basis of public interest. As indicated previously, their decision-making process is not neutral. It depends on their political engagement, and also on ad hoc reports, consultation with experts, economic value, lobbying influences and relations with their electorate support. These diverse criteria make it complex to impartially assess and weight the potential interests.

For instance, the commitment to rare disease programs could have been favoured by concerned patient groups, electors, researchers and pharmaceutical industries, although results from the perspective of economic sustainability of the health system or distributive justice of health primary goods might not have been so positive.[37] Investments in genomics could also be subject to discussion regarding public interest. The development of genomic

[36] Longino, H. 2016. The social dimensions of scientific knowledge. *The Stanford Encyclopedia of Philosophy.* Edward N. Zalta ed. https://plato.stanford.edu/archives/spr2016/entries/scientific-knowledge-social/. Accessed 28 April 2017.

[37] *This example is extracted from the interview of a member of the Swiss parliament in the qualitative research reported in Part III of the manuscript.*

medicine and companion diagnostics requires big investments and often public-private partnerships in order to aggregate biomedical research data, environmental data and phenotype data coming from routine patient medical records. The expected benefits are of course medical - with new, safer and targeted treatments- but also scientific and economic with the development of profitable high-level technology, know-how and patents. Nevertheless, the clinical implementation of these discoveries remains difficult; it necessitates the design of more innovative genomics-based trial and sequencing technologies, the integration of epigenetic changes, and the aptitude to enhance patient care practice. One main limitation is that not all mutations would be "druggable".[38] Furthermore, molecular profiling in oncology has disqualified broad treatment for all, in favour of targeted treatment to individual genomic drivers of cancer. This precision medicine cannot produce the same economies of scale in the fabrication and distribution of therapeutic products as those of the traditional pharmaceutical industry. It would be difficult to guarantee equal access to this personalized medicine for all citizens. Justice issues should therefore be appraised to avoid limiting personalized medicine to selected groups of people, e.g. those living in big and modern cities, close to university hospitals or biomedical experts.

These examples reveal the importance of justice in the assessment of the reasons justifying public interest in the production and use of large patient data sets. This assessment encompasses the concepts of distributive justice for a fair allocation of burdens and benefits, and also of legitimacy justifying the claim of public interest. The judgement of the value of these reasons is influenced by different moral theories proposing how life or actions should be. I will briefly cite the main theories invoked in the following chapters, indicating succinctly how they can relate to the evaluation of public interest.

Utilitarianism consecrates public utility. The action producing greatest public interest in the greatest number of citizens or patients is considered to be the "right" one.[39] Nevertheless, a utilitarian perspective is not always synonymous to "just" public interest, as the interests of minorities or future generations may be disregarded. The Kantian-deontological theory challenges the beneficence of public interest when it results from morally reprehensible actions. Moreover, for Kant, with persons being ends in themselves, public interest could not justify treating individuals merely as the means to others' ends.[40] Virtue theory focuses on the capacity to act according to "excellence" or "virtue", to be developed through education and

[38] Simon, R., Roychowdhury, S. 2013. Implementing personalized cancer genomics in clinical trials. *Nature Review. Drug Discovery*, 12(5):358-69.
[39] Mill, J.S. 1863. Utilitarianism. In *Oxford Philosophical Texts*, 1998. Roger Crisp ed. Oxford: Oxford University Press.
[40] Kant, I. Groundwork of the Metaphysics of Morals. 1785. Cahn, S.M. ed. 2002. In *Classics of Western Philosophy,* 6th ed. Indianapolis / Cambridge: Hackett Publishing Company, Inc.

training. It is the role of the state by means of public law to make citizens virtuous.[41] Virtue ethics challenges the top-down system of institutions making the decision on the relevance of public interest, by appealing to the bottom-up involvement of virtuous citizens.[42]

Combining the theories for an ethical management of patient data would lead to an "impossible" recommendation of collecting and using patient data for a right end, with the right means, without considering others as means, and with the goal of a good and virtuous life and the necessity to involve citizens in the decision-making process around patient data. Even taken in isolation, these main three philosophical approaches could be challenged in their ability to judge the value of public interest in practice. What, indeed, applies to individuals may not be easily transferable to populations and public institutions.

Other theoretical approaches have been proposed considering liberty and equality in society. In his theory of justice based on equal liberties and opportunities, Rawls[43] proposed a contractual method to identify the principles of justice, and combined it with a method of reflective equilibrium to justify the relevance of these principles that should play a foundational public role in a society.[44] Daniels has adapted Rawls's political approach to justice in the healthcare domain.[45] The evaluation of public interest has to take into consideration which level of inequalities would matter, and make those who are worst off as well off as possible (difference principle). In the case of persistent disagreement, the public deliberation should engage a larger public in the decision-making process with adequate and relevant information that could come from large patient data sets. Daniels recommends establishing the accountability of decision-makers, and a legitimate procedure of valuation of public interest. This or similar approaches have been used for a fair allocation of healthcare resources. Regarding patient data, patients may have the right to participate in the corresponding decision-making process. This raises the issue of rights and obligations for healthcare stakeholders.

Public interest reasons could also be discussed in terms of political rights, and not only in terms of goodness and justice. The question is how to choose the right option for public interest. The possibility of different options questions the theory's independence from the

[41] Aristotle. Nicomachean Ethics. From Prof. Dr. Richard Amesbury's lecture on social ethics. 2013. Theology Faculty. Zurich University.
[42] Galston, W.A. 2012. Virtue. In *A Companion to Contemporary Political Philosophy*, 2nd ed. Godin R.E., Pettit P., Pogge T. eds. Washington, DC: Blackwell Publishing Ltd, ch 54, pp. 842-851.
[43] Rawls, J. 2003. Principles of Justice. In *Justice as fairness. A restatement*. Erin Kelly ed. Cambridge, MA: The Belknap Press of Harvard University Press, part 2, pp. 39-79.
[44] Pettit, P. 2012. Analytical Philosophy. In *A Companion to Contemporary Political Philosophy*, 2nd ed. Godin R.E., Pettit P., Pogge, T. eds. Blackwell Publishing Ltd, ch 1, pp. 5-35.
[45] Daniels, N. 2001. Justice, Health, and Healthcare. *The American Journal of Bioethics*, 1(2):2-16.

institutions' beliefs.[46] In this dissertation, I will consider that rights are correlative to obligations, without entering presently into the philosophical debate of the primacy of rights or obligations.

These moral philosophies and justice theories should not be applied directly to judge public interest in practice. They help frame different forms of debate between citizens and institutions and ideally lead to the best or most appropriate political consensus for the society at a given period. The justification of public interest necessitates a careful appraisal combining normative reflection and case-based reasoning. Beauchamp and Childress support an integrated reflective model based on reflective equilibrium to adjust between the different moral theories and principles.[47] Nevertheless, they acknowledge that equilibrium is difficult to achieve.

For instance, it would be morally wrong to have accepted overriding patient rights for the benefit of a claimed public utility, while fulfilling a secondary goal with no public interest. However, such a conflict of interest, *"a set of circumstances that creates a risk that professional judgement or actions regarding a primary interest will be unduly influenced by a secondary interest"*[48], may also depend on how it is evaluated e.g. effective, potential or perceived as possible.

To overcome conflicting theories, norms and interests, Ricœur's ethical philosophy could provide for a new overarching architecture to public interest. Ricœur differentiated between the terms ethics and morality. Ethics is about what is considered to be good (teleological, Aristotelian perspective), and morality is about what imposes itself as obligatory (deontological, Kantian perspective). He also defined agency as an expression of the narrative identity.[49] For him, ethics is not about the identity of things or data, but about moral agents (in our topic, healthcare stakeholders) with *The Just* influencing all human actions. As his concept of narrative identity concerns the self as well as the others, everyone is a subject of rights. Consequently, reasons of public interest depend on the sense of justice and its expression in practice through the interpretation of facts and the juridical reasoning about the law.[50] Furthermore, Ricœur's approach has the advantage to take into account the

[46] Beauchamp, T.L. and Childress, J.F. 2009. *Principles of Biomedical Ethics*, 6th ed. New York: Oxford University Press, pp.333-367.
[47] Ibid, pp. 333-367.
[48] IOM (Institute of Medicine). 2009. *Conflict of Interest in Medical Research, Education, and Practice.* Washington, DC: The National Academies Press, p.45.
[49] Ricœur, P. 2000. *The Just* (trans: Pellauer, D.). Chicago and London: The University of Chicago Press, p. 3. Originally published as *Le Juste*. 1995. Paris: Editions Esprit.
[50] Ricœur, P. 2007. *Reflections on The Just* (trans: Pellauer, D.). Chicago and London: The University of Chicago Press, pp. 58-71. Originally published as *Le Juste 2*. 2001. Paris: Editions Esprit.

contributions of other ethical approaches, such as the Kantian and Rawlsian theories. However, it ensures the primacy of the ethical aim where conflicts between different moral norms are present (see more on Ricœur, Part IV).

To sum up, underlying moral judgements influence the reasons for public interest and its weight compared to patient rights. Faced with the difficulty of determinating how to evaluate what morally wrong means for public interest and the management of patient data, Ricœur's approach to justice and medical judgement could help define just and shared reasons of public interest, including the respect for patient rights.

Patient rights

The patient-physician relationship was the first domain where a notion close to patient rights was considered, although this was rather from the perspective of doctors' duty than the modern perspective of human rights. Since Hippocrates, the professional deontology as self-regulation has been based on the "do no harm" principle, but also on a medical knowledge that physicians were not ready to share with lay people, following a predominantly paternalistic approach. Changes arrived with the necessity to obtain informed consent from the research subject. Patients' self-determination was recognised. Thereafter, health law was able to challenge and complete the professional code of deontology, especially in complex situations created by biomedical scientific progress. Patient rights have essentially developed on the normative structure of human rights.

Patient rights are human rights

Human rights have been extensively and universally recognised after the Second World War with the Universal Declaration of Human Rights (UDHR) of 1948. In the preamble of the UDHR, the idea of human rights is linked to the notion of human dignity, which at this time was not clearly defined but was able to reconcile the different historical, philosophical, religious and cultural values of the members writing the Declaration.

In respect to healthcare, the UDHR recognises the right to protection against interference with privacy and the right to medical care.[51] The human right to health or more precisely to

[51] United Nations. Universal Declaration of Human Rights. 1948. Article 12. *No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.* Article 25. *1. Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the*

the *"highest attainable standard of health"* was later established in the International Covenant on Economic, Social and Cultural Rights (art. 12, ICESCR). In 2005, the right to benefit from scientific progress was added (art. 15, para. b, ICESCR). Wolff mentions that these steps in international law were important, but not enough to define strong obligations to fulfil rights; he distinguishes first-generation (or passive) rights of non-interference (e.g. privacy right) that are easy and cheap to enforce from second-generation (or active) rights (e.g. right to medical care, or access to scientific progress) requiring expensive actions to be enforced.[52] When it comes to strengthening the obligations to meet patient rights in practice, Wolff considers two points which could be applied to large patient data sets: the need to collect data and understand them i.e. to be able to disaggregate data, and the need for global health governance.

The European Biomedicine Convention (1997), also known as the Oviedo Convention, is a regional binding instrument for the states that signed and ratified it. [53] Its goal is to protect the dignity and identity of all human beings with respect to the application of biology and medicine. It guarantees every person's integrity, and other rights and fundamental freedoms (article 1). The primacy of the human individual is affirmed in article 2: "*the interests and welfare of the human being shall prevail over the sole interest of society and science.*" Article 10 on private life and the right to information provides that "*everyone has the right to respect for private life in relation to information about his or her health* (para. 1), that "*everyone is entitled to know any information collected about his or her health*", and that "*the wishes of individuals not to be so informed shall be observed*" (para. 2). The same provision stipulates that "*in exceptional cases, restrictions may be placed by law on the exercise of the rights contained in paragraph 2 in the interests of the patient*."

Other articles include norms relating to genetic testing and non-discrimination, scientific research and consent issues. Article 28 recognizes the need for a public debate on the ethical, legal and social implications (ELSI) of the "*fundamental questions raised by the developments of biology and medicine*".

The UNESCO Universal Declaration on Bioethics and Human Rights (2005) provides in Article 9 that *"the privacy of the persons concerned and the confidentiality of their personal information should be respected*". At the same time, it stipulates that "*to the greatest extent*

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event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

[52] Wolff, J. 2012. *The Human Right to Health*. New York: W.W. Norton & Company, Inc., ch 2.

[53] European Convention on Human Rights and Biomedicine. Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine.

possible, such information should not be used or disclosed for purposes other than those for which it was collected or consented to, consistent with international law, in particular international human rights law". Following articles include more general recommendations supporting the pluralist context - legal, ethical and political - of the bioethics principles.

Andorno analysed the main biolaw instruments (the three UNESCO declarations relating to bioethics (1997, 2003 and 2005), and the European Biomedicine Convention) and identified fourteen core principles with legal and moral imbrication.[54] With regard to large-scale biobanks (and their related patient data), he stressed that the main challenges regarding patients' rights concern issues relating to "*informed consent, confidentiality of data, discrimination on genetic grounds, feedback to participants, and property and benefit-sharing."* [55]

These issues are relevant to patient rights and their health-related data. First-generation fundamental rights of non-interference related to privacy and non-discrimination necessitate the direct involvement and consent of patients regarding their data. Return of information to patients, data ownership and benefits sharing are second-generation positive rights with corresponding obligations to be evaluated.

To sum up this brief review of international biolaw, the application of patient rights to patient data are a direct expression of human rights in the healthcare and biomedical domain. Three major themes can be identified:

1. Patient rights around patient data are dependent on principles of human rights and human dignity.
2. The protection of the fundamental privacy rights relates to the healthcare professionals' duty of confidentiality.
3. The context of research requires a special treatment of informed consent.

Local aspects of patient rights

A few countries have developed national laws dedicated to patient rights (e.g. Belgium) or to patient rights and obligations (e.g. Luxemburg). In the USA, the Patient Self-determination Federal Act ensures that patients are involved in healthcare decisions concerning themselves. Under this act, healthcare providers and health agencies have the obligation to inform patients about their rights. There is not such a specific law in Switzerland, but the Swiss Academy of Medical Sciences provides medical-ethical guidelines and most healthcare institutions deliver information on patient rights based on the Swiss legal and ethical framework.

[54] Andorno, R. 2013. *Principles of International Biolaw. Seeking Common Ground at The Intersection of Bioethics and Human Rights.* Bruxelles: Editions Bruylant, ch 1.
[55] Ibid, ch 7.

On July 24, 2008, Switzerland signed and ratified the European Convention on Human Rights and Biomedicine which develops in a binding legal way the fundamental rights and rules of law in the area of medicine (RS 0810.2). The Swiss constitution guarantees the fundamental rights of human dignity (article 7), right to life and personal freedom (article 10) and privacy rights (article 13.al 2 "*Everyone has the right to be protected against the misuse of their personal data*"). Subsequent federal health legislation on Data Protection (RS 235.1), Human Research (RS 810.30), Human Genetic Testing (RS 810.12), Patient Electronic Dossier (RS 816.1), and Medical Professions (RS 811.11) have specified patient rights regarding their data at a national level. The Swiss Civil Code (personality rights, mandate norms), Penal Code (professional secrecy), health cantonal laws and professional deontological rules complete the Swiss frame for patient rights. To sum up, regarding patient data the main identified patient rights are as follows:

- Right to information, which is mandatory to informed consent,
- Right to control patient's own patient dossier and to decide who can access it.
- Right to privacy, in particular right to patient data protection and confidentiality.

Restrictions on patient rights

Fundamental human rights and corresponding patient rights are not absolute rights. They can be legally limited under strict conditions, i.e.:

- A legal basis exists,
- A public interest or another fundamental right predominates,
- The restriction is proportional to the expected goal.

Moreover, a few "sacrosanct" rights must always be respected (e.g. prohibition of torture).

I have already developed the relativity of public interest depending on political, moral and societal choices. Some fundamental rights can also compete amongst themselves: e.g. freedom of opinion and expression may be restricted by the protection of privacy. The rules of proportionality ensure that the pursued goal does not justify all means. A proportional restriction must be appropriate to the goal, limited to the minimum intrusion necessary to reach the goal, and finally proportional in the narrow sense i.e. not disproportionate to the goal. In the legal area of the council of Europe, derogation to the CEDH is possible under such strict conditions and following the European Court's case law.[56] The Swiss constitution has similar conditions for restrictions stated in article 36 (RS 101).

[56] European Court of Human Rights. Council of Europe. European Convention on Human Rights (CEDH) http://www.echr.coe.int/Documents/Convention_ENG.pdf. Accessed 12 April 2017.

Some authors have differentiated the *violation* of a right (an unjustified action against a right) from the *infringing* of a right, a justified action overriding a right.[57] As the term *infringing* could lead to confusion because of the possible reference to an illegal action e.g. in the locution "patent infringement", the term *overriding* was preferentially used in the dissertation to describe all cases where rights are or could be limited following a justified or excusable action, moral justifiability being the subject of the ethical discussion. Right-bearers can give up patient rights if they specifically consent to do so. To legally allow this procedure, corresponding obligation-bearers have to inform the patient, and ensure that the patient is competent for decision-making regarding the object of consent and that she/he acts voluntarily. Information needs to be adapted to the patient and complete. In medical care and research, a valid informed consent requires these three distinct and additional components: information, voluntariness and competence.[58]

So, the case for overriding patient rights seems to be appropriately legally framed. However, the moral question remains present, in particular surrounding the justification of the superiority of public interest or others' interest over patient rights regarding their health-related data. Different arguments can be discussed. The knowledge argument supports the benefit of building large patient data sets because isolated patient data does not support research and medical advances. Actually, the main issues relate to the governance and ownership of decision-making about the superiority of public interest or others' interests. The major role of professionalism and expertise in the decision process could be viewed as a new form of paternalism. In the *Principles of Biomedical Ethics*, paternalism is defined as the intentional overriding of patient's rights to express preferences or actions based on the arguments of beneficence or non-maleficence for the patient.[59] The justification of paternalism concerning patient data would mainly rely on prospected social benefits. Antipaternalists may reject this justification as it imposes others' conception of good on patients, denies patients' capability to be treated as moral equals, and fails to respect patients' autonomy. The moral conflict between paternalism and autonomy influences the conditions of acceptability for overriding patient rights, and consequently the appraisal of the trade-off between public interest and patient rights with regard to patient data.

[57] Beauchamp, T.L. and Childress, J.F. 2009. *Principles of Biomedical Ethics*, 6th ed. New York: Oxford University Press, p. 352.
[58] Brock, D.W. 2008. Philosophical justifications of informed consent in research. In: *The Oxford Textbook of Clinical Research Ethics.* New York: Oxford University Press Inc., ch 56.
[59] Ibid note 57, pp. 208-216.

Patient rights ethics and autonomy

Patient autonomy is a well-recognized principle in biomedical ethics, but it needs to be further examined as the consideration of patient data is continuously evolving. Since the year 2000, the World Medical Association (WMA) has widened the field of human medical research with the notion of identifiable human data,[60] and in 2016, as mentioned before, it acknowledged the use of health data for commercial, administrative or political purposes. Finally, the impact of scientific and technological progress on the norms of privacy, confidentiality and data sharing has led to better data security and greater benefit from aggregating patient data.

With regard to patient data, its paper or electronic supports detached from the patient's body and the possibility to use it in a coding fashion, the concept of autonomy may not be considered primarily or only in a procedural way based on data protection, patient consent or health law. However, the theory of autonomy can be interpreted in various ways depending on the social and medical context, the level of permissibility for limiting privacy rights, and the link between autonomy, rights and accountability for choice.

Beauchamp and Childress have concentrated the concept of autonomy on "*autonomous choice rather than on general capacities for governance and self-management*." They justified this choice because they consider that a patient status results in weak governing capabilities due to "*illness, depression, ignorance, coercion, or other conditions that restrict their options.*" Concerning patient data, this choice is debatable. Large patient data sets have a broader scope than usual clinical settings. Patients with good digital education or acquired literacy in the context of chronic diseases or rare diseases are often capable of enhanced autonomy, understanding and decision-making regarding health-related data. Therefore, self-management and shared "participative" governance could increasingly contribute to a wide concept of autonomy including patient's agency freedom.[61]

Patient rights remain at the core of the ethical reflection because informed consent for giving up rights cannot resolve all issues. The Nuffield Council on Bioethics has already identified

[60] Declaration of Helsinki. 2013. "*Preamble: 1. The World Medical Association (WMA) has developed the Declaration of Helsinki as a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data.*". http://jamanetwork.com/journals/jama/fullarticle/1760318. Accessed 20 April 2017.

[61] Sen, A. 1985. Well-being, agency and freedom: The Dewey lectures 1984. *The Journal of Philosophy,* 82(4):203–204. *In this dissertation, I have primarily used the Sen's wide definition of agency freedom as: "the freedom to achieve whatever the person as a responsible agent, decides he or she should achieve".*

the problem:[62] *"...consent does not itself ensure that all of the interests of the person giving consent are protected nor does it set aside the moral duty of care owed to that person by others who are given access to the information. On its own, consent is not always necessary, not always sufficient for ethical extensions of data access."*

For O'Neill, individual autonomy limited to informed consent provides incomplete ethical guidance. Inspired by Kant's writings, she has recommended grounding human rights in human obligations. She proposes the concept of principled autonomy as self-legislation to make each free individual able to govern ways of thinking and willingness to act.[63] Principled autonomy applied to the management of large patient data sets necessitates that patients, donors and citizens have access to information and trust it in order to judge upon their rights and obligations. O'Neill has highlighted the difficulty of trusting others based on status or of placing trust in complex institutions.[64] Consequently, health professionals should increase their accountability for building trust with patients and citizens. They have the obligation to be competent, to follow regulated and audited practices and to be engaged in transparent and reciprocal communication with patients, peers and institutions. The value of informed consent would rely on a commitment to trustworthiness based on principled autonomy and the corresponding obligations not to deceive, coerce or harm, as well as the obligation to help others and respect their right to decide and act.[65]

In contrast to utilitarianism, Raz has used the concept of autonomy as linked to the individual capacity to choose amongst adequate options, free from manipulation or state coercion.[66] However, there is a risk of favouring some private and commercial options and disregarding the public reason of sharing in an expression of solidarity a maximum of data for the common good. Other researchers have challenged the concept of autonomy as a foundation for patient rights because of its usage in too broad a fashion.[67] Indeed, claims to autonomy have been made for Kantian reasons, contractual theories, liberty theories, Aristotelian view of the good, and also in opposition to utilitarianism or paternalism.

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[62] Nuffield Council on Bioethics. 2015. *Biological and Health Data: The Collection, Linking and Use of Data in Biomedical Research and Health Care: Ethical Issues*, p. 46. http://nuffieldbioethics.org/report/collection-linking-use-data-biomedical-research -health-care/ch apter-downloads-2/. Accessed 10 May 2017.
[63] O'Neill, O. 2002. *Autonomy and Trust in Bioethics*. Cambridge, UK: Cambridge University Press, ch 4, pp. 83-86.
[64] Ibid, ch 6, pp. 118-123.
[65] Ibid, ch 7, pp. 141-164.
[66] Vayena, E. 2015. Direct-to-consumer genomics on the scales of autonomy. *Journal of Medical Ethics*, 41:310-314.
[67] Dworkin, G. 2012. Autonomy. In *A Companion to Contemporary Political Philosophy*, 2nd ed. Godin R.E., Pettit P., Pogge T. eds. Washington, DC: Blackwell Publishing Ltd, ch 18, pp. 443-451.

With regard to patient data, I refer pragmatically to a broad concept of autonomy supporting the following claims:

- Patient rights to be informed and to give or withdraw consent regarding the use of their data,
- Patient rights to participate in decision-making and governance of healthcare projects based on patient data,
- Patient rights to have feedback on the use of their data, and also a right not to know,
- Healthcare professionals' rights to be informed and involved in the decision-making process and governance of patient data, influencing their work,
- Healthcare stakeholders' obligations to respect others' autonomy (e.g. patients, peers, patients' families, data managers, social workers)
- Citizens' rights to be informed and involved in the governance of public and private projects associated with patient data that are able to influence their health and the healthcare system, or that use healthcare competing resources.

The definition of autonomy is therefore tied to both autonomous choice and agency freedom for individuals and communities concerned about the production and use of patient data.

3. Thesis structure

In part I, whilst acknowledging the promising benefits arising from the production and use of patient data, I stated that it was fundamental to have appropriate governance for the ethical management of patient data. In the previous pages, I explained how *patient data, public interest* and *patient rights* are understood and used in this PhD thesis, as there are no clear-cut "true" or "universally harmonised" definitions of these concepts. So, how should we appraise the issues raised from the tension between patient rights and public interest in the management of large patient data sets? In order to address this question, the rest of this thesis will contain the following parts:

Part II and III assess the current ethical frame of, on the one hand, facilitating the gain of public interest in patient data whilst, on the other hand, partially trading off patient rights. To this end, a descriptive approach based on casuistic and qualitative methodologies is used.

- The casuistic perspective (Part II) reports my experience and personal reflection in the field of clinical registries, as well as the difficulties of identifying appropriate

uses of patient data in terms of either public interest or patient rights. The first case (chapter 4) concerns the use of patient data in the evaluation of a Swiss reform of public hospitals. The second case (chapter 5) narrates the importance of patient data for adjusting the treatment of epilepsy in pregnant women.

- The qualitative perspective (Part III) presents empirical research which has explored the ethical awareness of Swiss professionals and decision-makers involved in clinical registries (chapter 7). They play a central role in the governance of health information, and should be aware of their legal as well as moral obligations towards patients, peers and society. This empirical material permits us to infer that the ethical angle of a competing framework between public interest and patient rights might be wrong (chapter 8).

Part IV then reports a normative approach based on Paul Ricœur's 'little ethics', recommending that healthcare stakeholders should manage health information from a narrative standpoint. This approach permits us to take into account the multiplicity of stakeholders and the complexity of contexts and purposes of large patient data sets. I will describe how Ricœur ensures the transition from narration to ethics and proposes an overarching ethical approach, able to guide the agents governing the production and use of patient data. (chapters 8, 9).

The overall research flow combines inductive and deductive analysis following the pragmatic approach advocated by Ives and Draper.[68] As a result, in the conclusion (Part V), chapter 10 generates the argument which reframes the ethical guidance for patient data. Chapter 11 applies the new framework to the previous empirical examples. A general implementation strategy is then suggested in chapter 13. Subsequently, chapter 14 provides a list of concrete recommendations mainly in the Swiss context.

[68] Ives, J., Draper, H. 2009. Appropriate methodologies for empirical bioethics: It's all relative. *Bioethics*, 23(4):249-258.

PART II. CASUISTIC APPROACH

Case analysis has been developed in clinical ethics, starting with a detailed review of a case-story, drawing upon responses to similar cases, weighing the principles involved and subsequently developing an ethical evaluation by analogical thinking. The advantage of casuistry is that it permits combination of different ethical principles and theories, depending on the context of each particular case. The method is, however, open to criticism, due to bias induced by reporting the facts retrospectively, or by applying moral theories in a too indeterminate way.[69] Casuistry therefore requires prudence, intuition and wisdom.[70] I used an approach derived from casuistry as a learning process for possible ethical issues with patient data management in the context of clinical registries.

4. Impact of new health care policies on the quality of acute myocardial infarction treatment in Swiss hospitals: A before and after observational study.

Introduction

This study IDoC 1-D was one of the five sub-projects (A to E) of the overall IDoC project *"Assessing the Impact of Diagnosis Related Groups (DRGs) on patient care and professional practice"* performed under the leadership of the Institute of Biomedical Ethics of the University of Zürich and funded by the Swiss National Fund. The design and first findings were presented as a part of the general IDoC symposium on November 14th, 2013.[71] As a member of the IDoC group, I also contributed to the joint IDoC publication in the peer-reviewed journal *Swiss Medical Weekly*.[72]

[69] Arras, J.D. 2009. A case approach. In *A Companion to Bioethics*, 2nd ed. Kuhse, H., Singer, P. eds. Oxford: Blackwell Publishing Ltd, ch 12.
[70] Jonsen, A.R. 2010. Casuistry and clinical ethics. In *Methods in Medical Ethics*. 2nd ed. Sugerman, J. Sulsamy, D.P. eds. Washington, DC: Georgetown University Press, ch 7.
[71] IDoC Symposium (PDF). http://www.ibme.uzh.ch/de/ethik/forschung/drg.html. Accessed 25 April 2017.
[72] Wild, V. Fourie, C., Frouzakis, R., Clarinval, C., Fässler, M., Elger, B., Gächter, T., Leu, A., Spirig, R., Kleinknecht, M., Radovanovic, D., Mouton Dorey, C., Burnand, B., Vader, J.P., Januel, J.M., Biller-Andorno, N. 2015. Assessing the impact of DRGs on patient care and professional practice in Switzerland (IDoC) - a potential model for monitoring and evaluating healthcare reform. *Swiss Medical Weekly*, 145:w14034.

The case study IDoC 1-D reports an example of the secondary use of patient data from a national clinical registry. In this registry, patient data were initially collected to examine hospital treatment for patients presenting with an acute myocardial infarction. The registry set-up included the possibility of re-using data for other research projects, subject to approval by the steering committee. We thus measured the impact of a national hospital reform on the quality of treatment delivered to the registry patients. The treatment of acute myocardial infarction is based on well-established guidelines from evidence-based medicine, and thus any changes in adherence to these guidelines could indicate any clinical impact due to this hospital reform. The advantage of such a form of evaluation is that the indicators are independent of the public administration responsible for the reform.

The scientific research of evidence is usually contrary to the philosophical research of reasons.[73] It was thus interesting to reflect on the use of an evidence-based medicine approach to contribute to a project aiming at a reasons-based ethical appraisal of a public hospital reform. However, the passage from the facts to the ethical reasoning remains difficult. Reasons behind our observations suggesting that the overall maintenance of treatment quality could have been associated with some "hidden" moral distress of the hospital healthcare professionals remains hypothetical.

This study was the first step of my PhD research. I wanted to investigate further my intuition that something could have been morally questionable in the management of patient data.

I presented the study results in a poster session at the International Forum on Quality & Healthcare, in Gothenburg, Sweden (April 2016). We published the following article together with Milo Alan Puhan and Nikola Biller-Andorno, in May 2016, in the peer-reviewed *Journal of Hospital Administration,* 5 (3): 10-19.[74]

The publication:

[73] Hope, T. 2004. On why medical ethics is exciting. *In Medical Ethics, a Very Short Introduction*. Oxford: Oxford University press, ch 1.
[74] doi:10.5430/jha.v5n3p10.

ORIGINAL ARTICLE

Impact of new health care policies on the quality of acute myocardial infarction treatment in Swiss hospitals: A before and after observational study

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ABSTRACT

Objective: Following a revision of the Swiss Federal Health Insurance Act, the regional hospital planning structure was modified and the hospital financing organized at a national level with the use of diagnosis related groups (SwissDRGs). The aim of this observational study was to determine in an independent way the initial impact of these changes on the quality of hospital treatment, with patients hospitalized for Acute Myocardial Infarction (AMI) being the chosen study group.
Methods: We used prospective data from a Swiss clinical registry for AMI. The quality was measured based on the adherence to 10 evidence-based performance indicators for AMI treatment, and on the evaluation of in-hospital outcomes (mortality, complications, length of hospital stay [LOS]) globally and for seven pre-defined vulnerable subgroups. The study compared patient-based data before (2011) and after (2012) the implementation of the reform.
Results: The study included 33 matched hospitals, and compared the AMI treatment of 2,491 patients in 2011 (before) and 2,544 in 2012 (after the hospital reform). No significant changes in the evidence-based performance indicators were observed, but an on average one day reduction in the LOS and worse outcomes in one of the pre-defined group of patients were found. The issue of how the clinical team achieved these results was not directly explored due to the underlying registry's unalterable structure.
Conclusions: One year after the implementation of a new hospital financing system in Switzerland, the quality of treatment delivered to patients hospitalized for AMI was maintained overall. The worse in-hospital mortality in one pre-defined vulnerable subgroup could reflect the emergence of difficulties for clinical teams to cope with patients demanding extra care and time. Further investigation is warranted.

Key Words: Hospital medicine, Quality measurement, Health policy, Evidence-based medicine, Clinical registries

1. INTRODUCTION

Healthcare systems differ worldwide but they all share the common aims of high quality and cost containment, which in turn leads to a need for reforms and for an increased accountability to monitor and evaluate health care changes and disease management. The recent revision of the Swiss Federal Health Insurance Act was planned to both contain hospital costs and guarantee hospital healthcare quality, whilst respecting the three main principles of effectiveness, adequacy and economical efficiency, as laid down by the law.[1] Switzerland was therefore a good proxy for the evaluation of healthcare quality under cost constraints.

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Table 1. Reform of hospital financing in Switzerland[1]

Common features of Swiss hospital financing before and after the reform implementation	
• Universal basic health insurance (UHI) compulsory for each Swiss resident, federal competence. • Multiple competitive Swiss health insurers for UHI. • Private complementary insurers. • Cantonal (*i.e.* regional) competence for healthcare planning. • No free choice of doctor in hospital. • Health services not covered by UHI: payments by patients and private insurers.	
Main UHI financial aspects before January 2012	**Main UHI financial aspects from January 2012**
Cantonal planning	
• Cantonal competence. • Establishment of a cantonal list of public and subsidized hospitals eligible for cost reimbursement. • Choice of hospital: free choice limited to hospitals enlisted on the cantonal list of the resident. • Cost allocation: ○ Cantonal listed hospitals: Minimum of 50% at cantonal level, remaining cost paid by UHI. ○ Cantonal non-listed hospitals: payments by patients and private insurers. ○ Hospitals in other cantons: full payments by patients and private insurers (except for extra-cantonal hospitals enlisted in the cantonal list and in a few medically justified exceptions).	• Cantonal competence, but economics, infrastructure and quality standards for hospital selection are defined at federal level. • The cantonal list of eligible institutions for cost reimbursement includes not only public and subsidized hospitals, but also private hospitals and potentially hospitals from other cantons. • Choice of hospital under UHI: free choice for the whole of Switzerland, amongst the list of indexed hospitals. • Cost allocation: ○ Cantonal listed hospitals: Minimum of 55% at cantonal level, maximum of 45 % for UHI. ○ Cantonal non-listed hospitals: payments by patients and private insurers or if they have signed a contract with UHI, UHI contributes up to 45%. ○ Listed hospitals in other cantons: reimbursement based on the residential cantonal prices. Potential surcharges paid by patients and private insurers.
Payment model for health services and structure	
• Collectively negotiated between hospitals and health insurers and approved by the respective canton at individual cantonal level. • Daily price, fee-for-services, AP-DRGs, or mixes of them. • Infrastructure investments managed separately from health services payment.	• Collectively negotiated between hospitals and health insurers and approved at national level. • Based on Diagnosis Related Groups (SwissDRGs) for somatic acute care. • SwissDRGs' national cost-weights applied to hospital basis price. • Infrastructure investments included in SwissDRGs.
Challenges	
• Discriminatory cantonal allocation of costs for citizens with complementary private insurances compared to citizens with UHI only (judicial judgment). • Outside of a few exceptions, no free country-wide choice of hospital. • Limited availability of national standards to compare hospital services between cantons. • Limited cost transparency reported at insurers' level. • Inadequate dual financing of hospital investment and services at cantonal level. • Difficulties in containing hospital costs.	• Who pays the costs in excess of SwissDRGs reimbursement rates? Not the insurers (max 45%), therefore the institutions' owner? Canton? Need to close or restructure hospitals? • Threat to quality of health services and professional practice due to cost pressure from SwissDRGs. • Risk of under-investment. • Insurers able to challenge SwissDRGs coding and reimbursement levels, potentially delaying payment to hospitals. • Need to establish evidence of improved hospital economics, access and quality.

The legal changes in Switzerland were implemented in 2012 and involved two sets of measures: A new cantonal hospital planning and the introduction of a payment model based on national diagnosis related groups (SwissDRGs). Table 1 summarizes the main features of the Swiss universal health insurance (UHI) for hospitals and the modifications due to the hospital financing reform. Some cantons in Switzerland have been working with DRGs (APDRGs) before 2012. SwissDRGs, however, are based on an adapted version of the German DRGs, which were considered to be very detailed,

with a high level of precision for comorbidities and case severity. Furthermore, as Switzerland is a small country with German being the most widely spoken language, it was more cost effective to take over the existing field-tested German system.

The intent of the national harmonization was to compare and control costs while guaranteeing health care quality, but to date no evidence has been provided to support this claim. There is as yet no national center for health care quality in Switzerland and no independent program to assess the impact of governmental health care reforms on hospital clinical pathways. Swiss health care professionals were questioning the new hospital policies, which could lead to a reduction in the quantity of care for a standard case, to premature patient discharges, and a decrease in the quality of hospital treatment. Furthermore, patients requiring more intensive care could be the most vulnerable.

The aim of this study was to assess the quality of a routine hospital treatment, with independently recorded evidence-based indicators and outcomes, in a comparative study before and after the introduction of this Swiss national reform. The results were also contributing to a multi-disciplinary project assessing the impact of the reform on patient care and professional practice.[2]

2. METHODS

The study was performed in order to collect prospectively the data from the period before the implementation of the reform, and used comparable indicators before and after the changes. Moreover, the study design had to integrate the constraints of the absence of a control group and the funding period limited to 3 years.

2.1 Research strategy

The first step was to identify the agents concerned by the new reimbursement policy and to define the types of measurement.[3] Hospitals were the agents, and the measurement was based on the implementation of evidence-based recommendations for patients for a given disease. There are many ways of measuring healthcare quality;[4] coded administrative data and Inpatient Quality Indicators (IQI) are currently used,[5] but they are linked to the coding guidelines and regulations of the DRGs themselves,[6] with a possible self-preference bias. In addition, the importance of an independent evaluation of government-led reforms has been emphasized.[7] Thus, these administrative data and IQI were not considered suitable for this study.

The decision was thus to develop a quality measurement based on evidence-based recommendations and observational data in the field of acute myocardial infarction (AMI). First, coronary artery disease is associated with a high burden of disease and benefits from long-standing international research and guidelines.[8] These evidence-based recommendations highlight critical clinical care processes to ensure quality in the treatment of AMI patients.[9] Second, adherence to evidence-based recommendations can be measured with observational data,[10] and clinical registries are examples of observational data supporting quality improvement for a clinical condition, diagnostic, procedure or therapy.[11] Third, there was an ongoing clinical registry for AMI in Switzerland, registered at ClinicalTrials.gov and approved by the Supra-Regional Ethics Committee for Clinical Studies, the Swiss Board for Data Security, and the Cantonal Ethics Commissions.[12]

2.2 Access to data and cooperation process

An agreement was signed at the beginning of 2011 with the registry steering committee for the 3-year research period. It permitted the secondary use of registry data for the years 2010, 2011 and 2012, but not an alteration of the primary structure or sampling design of the registry itself. The participating hospitals owned the data and data could not be disclosed to other parties or published without prior consent of the steering committee. It was agreed that registry data were strictly confidential and that hospital names had to remain anonymous. Patient data were already de-identified in the registry.

The presence of the study researcher in the registry data center allowed an in-depth understanding of the production and use of the registry data, and has thus facilitated transparency and trust. The analysis of data developed in the study was different from the registry's usual analyses. In the registry, the analysis took place on the basis of patient cases; matching hospitals over the years was not required. In our study, the matching units were the hospitals and as a consequence, patients from hospitals, which entered or left the registry in one of the 2-year periods of study, were excluded. Furthermore our study considered performance indicators with different appropriate denominators. The registry analysis concerned a larger and expandable number of variables and could include data from several previous years. Despite these different approaches to clinical data, the cooperation process led the registry's steering committee to support study disclosure.

2.3 Development of the measurements based on evidence-based recommendations

Our study drew on international evidence-based recommendations for AMI treatment with predominant class and level of evidence IA or IB.[13–19] The 2010 retrospective registry

data were used to adjust the measurement set to the existing registry structure. In 2010, 2275 AMI patients were included in the registry by 39 hospitals and amongst them 9 had a round the clock catheter laboratory (CathLab) service available. Some possible indicators were not developed because adequate variables were not at that time collected in the registry (*e.g.* initial heparin dose, adult smoking cessation advice) or not systematically controlled (*e.g.* high technology interventions for coronary vessels).

Other performance indicators were disregarded because of missing or implausible data at a rate $\geq$ 5%: these were mainly time indicators such as time from symptom onset to hospital admission in patients transferred from/to hospitals not participating in the registry, or in NSTEMI patients (without ST elevation at the initial ECG) presenting usually with a less straightforward diagnosis of AMI. For the purpose of transparency, delays from symptom onset to hospital admission are shown as baseline characteristics, but not used as performance indicators.

Vital signs at admission are also reported as baseline characteristics only, because these data were not audited nor linked to documented clinical shock. Only resuscitation prior to admission was a controlled reported item. Risk factors were identified from the anamnesis section of the questionnaire. For instance a diagnosis of diabetes was identified from the data reported under the headings Charlson index, risk factors and regular medical treatment. Missing data exceeded 5% for some items such as smoking habits, body mass index or dyslipidemia, and was distributed unequally across hospitals with no possibility to adjust them with a proper weighting. These variables are shown as descriptive baseline but cannot be used for group comparison. For the selected variables to be reported and used as indicators, the measurement set retained for the study had to achieve a rate of less than 3% missing or implausible data from each participating hospital.

2.4 Measurement set description

The set combines ten performance indicators of adherence to evidence-based recommendations, in-hospital outcomes and an evaluation of access to care for pre-defined patient subgroups. Table 2 details the measurement set.

In this study, primary percutaneous coronary intervention (PPCI) refers to balloon angioplasty, with or without stenting, undertaken as the primary reperfusion strategy for AMI without previous or concomitant thrombolytic therapy and performed within 24 hours following hospital admission. Left ventricular systolic dysfunction was defined as the left ventricular ejection fraction < 50% measured by angiography or < 40% measured by cardiac echography.

In hospital outcomes included all-cause mortality, major adverse cerebrovascular and cardiac events (MACCE), and the length of hospital stay (LOS) measured in days: median, (IQR 25^{th} and 75^{th} percentiles). Moreover, the following seven subgroups were defined a priori as vulnerable because they represent patients, who may have had a less straightforward diagnosis, required more intensive care or where delays to hospital admission may have been more frequent. These are: advanced age over 75 years,[20] female gender,[21] AMI related cardiac insufficiency at admission defined with Killip classes 3 or 4,[22] existence of comorbidities measured by the Charlson comorbidities index (CCI) and more specifically histories of diabetes or renal insufficiency.[23] We added the socio-economic factor "basic insurance coverage only" for patients only covered with the UHI (Universal Health Insurance), additional private and semi-private insurances only being paid by wealthier patients.

2.5 Implementation of the before and after study

The measurement set was applied to prospectively collected data to compare the quality of treatment delivered to AMI patients before (2011) and after (2012) the hospital payment changes. The study included all patients from the national clinical registry *i.e.* AMI patients hospitalized within the first 24 hours of symptoms onset, and defined as STEMI or NSTEMI by characteristic symptoms and/or ECG changes, and cardiac marker elevation. Moreover as we wanted to match hospitals before and after the reform, only patients included by the hospitals that participated in the registry in both years 2011 and 2012 were considered for the analysis. We considered patient-based data in preference to admission-based data; patient-based data follow patients across hospitals and exclude double counting the same patient in the case of hospital transfer.

2.6 Statistical analysis

Data are presented as a proportion of valid cases for discrete variables, as means $\pm$ 1 standard deviation for normally distributed continuous variables and as medians with IQR (25% and 75% percentiles) for non-normally distributed continuous variables. Each individual adherence rate to guidelines was calculated as a performance ratio of valid cases over eligible patients for the indicator. Comparisons before (2011) and after (2012) concerned independent patients from matched hospitals, and were compared using the Student's two-tailed unpaired t test for continuous normally distributed variables, the Mann-Whitney U test for continuous non-normally distributed variables and the Pearson chi square test for categorical variables. A probability value of < .05 was considered significant.

Table 2. Measurement set for patients hospitalized within 24 hours of acute myocardial infarction

Measure Name	Eligible patients*	Measure type
A. Adherence rate to evidence-based recommendations in %		
1. Immediate triple therapy (ASA, $P2Y_{12}$, AC)	Alive in the first 24h	Treatment
2. Primary PCI performed: PPCI	All	Treatment, diagnosis
3. Evaluation of LVEF (with angiography or echography)	Alive at discharge	Intermediate outcome, diagnosis
4. DAPT (ASA, $P2Y_{12}$) at discharge	Alive at discharge	Treatment
5. Beta-blocker at discharge	Alive at discharge	Treatment
6. Statins at discharge	Alive at discharge	Treatment
7. ACEI or ARB for LVSD, at discharge	Alive at discharge and LVSD	Treatment
8. Cardiac rehabilitation patient referral	Alive at discharge and no transfer to other hospitals or nursing homes	Patient education
9. Door-to-balloon time ≤ 90 minutes	STEMI, PPCI, no symptoms onset in hospital, no transfer from/to non participanting registry hospitals	Treatment, process
10. Time to reperfusion ≤ 12 hours	STEMI, PPCI, no symptoms onset in hospital, no transfer from/to non participanting registry hospitals	Treatment, process
B. In-hospital outcomes		
1. All cause mortality, adjusted	All	Outcome
2. MACCE, adjusted	All	Composite outcome
3. Length of hospital stay, days (median, IQR)	All	Process, outcome
C. Access to care/clinically vulnerable patients		
1. Age > 75 years	All	Admission rate %.
2. Female gender	All	In-hospital outcomes.
3. Killip 3 and 4 at admission	All	Adherence to guidelines when relevant.
4. Charlson Comorbidities Index (CCI) ≥ 2	All	
5. Diabetes	All	
6. Renal insufficiency moderate & severe	All	
7. Basic insurance coverage only	All	

* Eligible patients: denominator of the ratio for adherence to guidelines calculation, or for admission rate. AMI: acute myocardial infarction; AC: anticoagulant therapies; ACEI: angiotensin-converting enzyme inhibitor; ARB: angiotensin receptor blocker; ASA: aspirin; CCI: weighted Charlson index for comorbidities; DAPT: dual antiplatelet therapy; IQR: interquartile range; LVEF: left ventricular ejection fraction; LVSD: left ventricular systolic dysfunction; MACCE: major adverse cardiac- and cerebrovascular events; NSTEMI AMI without ST elevation on the initial electrocardiogram; $P2Y_{12}$ indirect (thienopyridines) and direct $P2Y_{12}$ inhibitors; (P) PCI (primary) percutaneous coronary intervention; STEMI AMI with segment ST-elevation or new left bundle branch block on the initial electrocardiogram

Mortality and MACCE were adjusted for differences in baseline characteristics known to influence survival and admission year. We used a logistic regression model with in-hospital mortality (or MACCE) as a dependent variable and the following independent variables: year of admission as the variable of interest, and age, sex, resuscitation before admission, diagnosis STEMI/NSTEMI, Killip class 3 or 4 at admission and comorbidities as characteristics known for their strong impact on in-hospital mortality (heart failure, diabetes, renal insufficiency or metastatic tumors) and thus acting as potential confounders.[23] The odd ratios (ORs) were presented with 95% CI. The SPSS software (SPSS Inc., Chicago, Illinois; Version 21.0) was used for all statistical analyses.

3. RESULTS

The clinical registry enrolled 5,935 patients (2,491 in 2011, 2,544 in 2012) whose data were available at the registry data center at the end of June 2013. The data were accessed and controlled for our secondary analysis: 5,035 patients met the study inclusion criteria and the remaining 900 patients were excluded for the following reasons: double entries (n = 142 patients transferred and included both in hospitals with and without CathLab for the same AMI); patients who had PCI before admission in a non-reporting hospital (n = 92); patients from hospitals that did not participate in both years of the registry (n = 666 in total, divided in n = 450 for participation in 2011 only, n = 216 for participation in 2012 only).

Table 3. Baseline characteristics of patients admitted with AMI according to year of admission

	2011	2012	*p*-value
N patients (N hospitals)	2,491 (33)	2,544 (33)	
N patients (%) from hospitals with CathLab (N = 12)	1,834 (73.6)	1,981 (78.1)	
N patients (%) from hospitals without CathLab (N = 21)	657 (26.4)	563 (21.9)	
Transfers from non-participating hospitals	610 (24.5)	636 (25.0)	
PPCI	1,760 (70.7)	1,840 (72.3)	.416
Age (years)	67.1 ± 13.1	66.6 ± 13.0	.231
Male gender	1,807 (72.5)	1,883 (74.0)	.237
Delay symptoms onset to admission	1,667	1,808	
• hours: minutes (median, IQR 25, 75 quartiles)	3:30 (1:37, 8:45)	3:06 (1:30, 8:30)	.264
Diagnosis STEMI	1,295 (52.0)	1,320 (51.9)	.943
Resuscitation prior admission	123 (4.9)	153 (6.0)	.093
Symptoms at admission: typical	2,035 (81.7)	2,000 (78.6)	.022
Vital signs at admission:			
• Systolic blood pressure < 100 mmHg	145 (5.9)	182 (7.3)	.051
• Heart rate > 100 beats	269 (11.0)	240 (9.6)	.125
Heart rhythm:			
• Sinus rhythm	2,236 (89.8)	2,303 (90.5)	.666
• Atrial fibrillation	133 (5.3)	137 (5.4)	
Killip class:	2,483	2,535	.866
• 1	2,032 (81.8)	2,085 (82.2)	
• 2	238 (9.6)	247 (9.7)	
• 3	83 (3.3)	75 (3.0)	
• 4	130 (5.2)	128 (5.1)	
Risk factors:			
• Current smoker	855 (38.4)	872 (38.5)	.904
• History of Dyslipidemia	1,195 (54.3)	1,355 (58.9)	.002
• History of Hypertension	1,518 (64.2)	1,519 (62.2)	.160
• History of Diabetes	506 (21.4)	501 (20.3)	.341
• Obesity Body Mass Index > 30	465 (22.4)	477 (21.5)	.465
History of MI or stable angina	830 (34.3)	812 (32.8)	.275
Vulnerable sub-groups:			
• Age > 75 years	795 (31.9)	758 (29.8)	.104
• Female gender	684 (27.5)	661 (26.0)	.237
• Killip classes 3 and 4 at admission	213 (8.6)	203 (8.0)	.464
• Diabetes (patient history)	506 (21.4)	501 (20.3)	.341
• Renal insufficiency	224 (9.2)	230 (9.2)	.990
• CCI ≥ 2	627 (25.2)	645 (25.4)	.881
• Basic insurance coverage only	1,693 (71.6)	1,859 (75.4)	.003

Note. Values are mean ± *SD* (standard deviation), median (IQR), N/total (%), or N. MI: (acute) myocardial infarction; CathLab a round the clock catheter laboratory service available; CCI: Charlson index for comorbidities; IQR: interquartile range; PPCI: primary percutaneous coronary intervention; NSTEMI AMI without ST elevation on the initial electrocardiogram; STEMI AMI with segment ST-elevation or new left bundle branch block on the initial electrocardiogram

As shown in Table 3, patient baseline characteristics such as age, gender, AMI diagnosis, hemodynamic status at entry, major risk factors, and degree of comorbidities measured by the Charlson index were not statistically significantly different between the 2 years of admission; however, a higher number of patients with "basic insurance coverage only" was recorded in 2012.

The results showed no statistically significant differences in the quality of treatment for eight indicators of adherence to evidence-based recommendations. The indicators 1 and 4 could not appropriately record the prescription of a new direct $P2Y_{12}$ inhibitor treatment introduced onto the market at the end of 2011; the registry questionnaire was modified in October 2011 to collect this new item but the changes were

implemented at an unequal pace amongst hospitals; therefore, the observed difference between 2011 and 2012 cannot be taken into consideration statistically nor clinically (see Table 4).

Overall, the adjusted rates of mortality (OR 1.061, 95% CI 0.784-1.435) and MACCE (OR 0.915, 95% CI 0.704-1.188) did not show statistically significant changes in 2012 *vs.* 2011. There was a statistically significant reduction of 1 day in the median LOS in 2012 compared to 2011, in all patients and in STEMI patients (median of 5 days [IQR 2,8] in 2011 to 4 days [IQR 2,7] in 2012, $p = .001$); vulnerable subgroups were not discharged earlier.

The analyses of the seven vulnerable subgroups showed that one subgroup, the patients with Killip class 3 or 4 at admission, had statistically significant worse in-hospital outcomes. After adjustment for age and gender, the results confirmed that year of admission had influenced in-hospital mortality in these patients (OR 1.60, 95% CI 1.06-2.41) and in-hospital MACCE (OR 0.658, 95% CI 0.439-0.987).

Table 4. Impact of admission year on adherence rate to evidence-based recommendations in AMI patients

Adherence rate to evidence-based recommendations in % (N)	2011	2012	*p*-value
1. Immediate triple therapy (ASA, $P2Y_{12}$, AC)	86.6 (1,774)	75.7 (1,875)	< .001*
2. Primary PCI performed: PPCI	73.2 (1,730)	74.8 (1,797)	.402
3. Evaluation of LVEF	84.2 (1,991)	85.1 (2,043)	.406
4. DAPT (ASA, $P2Y_{12}$) at discharge	93.7 (2,041)	87.0 (2,079)	< .001*
5. Beta-blocker at discharge	74.2 (1,731)	72.1 (1,730)	.096
6. Statins at discharge	88.9 (2,079)	89.5 (2,149)	.466
7. ACEI or ARB for LVSD, at discharge	85.7 (654)	85.9 (639)	.923
8. Cardiac rehabilitation patient referral	43.7 (750)	45.3 (786)	.330
9. Door-to-balloon time ≤ 90 minutes	62.1 (347)	65.3 (416)	.246
10. Time to reperfusion ≤ 12 hours	83.9 (390)	85.2 (459)	.574

* The differences in the indicators 1 and 4 are due to the introduction of a new antiplatelet drug at the end of 2011. No weighted adjustment was statistically possible for the 33 hospitals. AMI: acute myocardial infarction; AC :anticoagulant therapies; ACEI angiotensin-converting enzyme inhibitor; ARB angiotensin receptor blocker; ASA: aspirin; DAPT: dual antiplatelet therapy; LVEF left ventricular ejection fraction; LVSD: left ventricular systolic dysfunction; $P2Y_{12}$ indirect (thienopyridines) and direct $P2Y_{12}$ inhibitors; PCI: percutaneous coronary intervention

4. DISCUSSION

The customized use of clinical registry data enabled a clinical assessment of hospital treatment quality independent from administrative data and SwissDRGs. Despite the limited time available for our research before the introduction of the reform, it was possible to collect prospective data before the hospital payment changes and to perform a before and after observational study.

4.1 Comments on the results

The 33 study hospitals were distributed across Switzerland and represented about 30% of all AMIs.[24] The higher number of patients with "basic insurance cover only" in 2012 could be a simple consequence of a reclassification of patients following the new hospital planning. Baseline characteristics in 2011 and 2012 confirmed the absence of relevant differences in the clinical profile of the two populations in comparison.

The results showed that the quality of treatment for AMI patients was maintained overall after the introduction of new policies and SwissDRGs. However, this finding needs to be interpreted cautiously. First, it is not clear how the clinical team has achieved this preservation of quality and whether this result will hold over time. Additional studies, which focus on the behavior of healthcare professionals, would be useful to help interpret these results because both medical and non-medical staff are key players for implementing evidence-based recommendations.[25] Moral distress could develop following challenging or constraining conditions of work.[26] This is all the more important, as a recent mixed-method study emphasized the importance of an integrated approach to quality management.[27] Concerning the reduction of the LOS, it is recognized that LOS influences substantially total hospital expenses.[28] Nevertheless, if this result is confirmed over time, it still has to be interpreted with prudence as a positive impact because waste may not have been reduced, rather it could just represent a shift of activities to the ambulatory sector without any overall cost reduction. The EuroDRG group, who identified the difficulty to match AMI clinical patterns with an appropriate DRGs classification for costs and performance comparison, has already recognized this issue.[29]

With regard to the subgroup of patients with Killip class 3 or 4 at admission, their worse in-hospital mortality could reflect

a stochastic variation, but also the emergence of difficulties for clinical teams to cope with patients demanding extra care and time under cost constraints. Even an incorrectly perceived loss of quality by clinical teams has been associated with an increase of patient mortality.[30]

It is interesting to note that the analysis of specific clusters for vulnerable patients has detected changes that would have remained invisible in a solely global quality appraisal. It has already been demonstrated that global health outcomes can mask differences between groups and in particular for the ones vulnerable to inequalities.[31] The DRGs system itself favors a global approach because variations from a standard case are regarded as outliers to be solved by a continuous adjustment. Our study shows that health care quality could be impaired for one vulnerable group. This quality issue is also implicitly recognized at the European level as payment incentives for quality are recommended in order to improve the DRGs system.[32]

4.2 Comments on the study process

The pioneer aspect in Switzerland of this study is explained by the following factors. First, the absence of a single health insurance provider as well as the legislation on privacy and data protection has limited the development of nationally publicly funded clinical registries. Second, there is as yet no single center for quality and safety of the Swiss health care system; the Swiss Federal Council is currently working on a federal law for such a center. The Swiss Academy of Medical Sciences has been consulted and has emphasized the issues of governance and independence as well as the need for high quality medical registries and measurements.[33]

On a more general point of view, the governance and independence of hospital quality evaluation remain important issues. This applies not only to the Swiss Bismarck model of hospital care, but also to countries with a Beveridge model of national healthcare systems, which may have more extensively developed medical databases for quality evaluation but are also heavily dependent on public funding. An independent evaluation of health care quality would support the learning process regarding clinical practice under cost pressures, and encourage the "bottom-up" involvement of clinical teams in discussions pertaining to health care policies.

4.3 Limitations

This study has some limitations. First, the main limit came from the time-limited funding of the project, which did not permit pursuing the monitoring after 2013. A prolongation would increase the chance to detect changes in treatment if they occur. Second, the advantage of ready-to-use secondary data was counterbalanced by the dependence on the underlying clinical registry's unalterable structure. Clinical registries carry a risk of bias through non-consecutive inclusion and confounding factors. The quality of the data recording, the need to include consecutive patients, the necessity of long-term commitment from the participating hospitals and the conduct of regular audits are key elements of registry usefulness. A further limitation came from the impossibility to introduce in this short time period the collection of contraindications to- or patient refusal of- drug treatment, as well as the collection of controlled high-technology data (for instance number and type of stents), patient socio-economic indicators, or satisfaction scales for patients and clinical teams. These limitations identify how challenging it can be to involve clinical registries in quality assessment research. They also indicate directions for improvement such as the implementation of recommendations to promote the quality and social value of clinical registries, and the importance to maintain a good interdisciplinary dialogue for an independent evaluation of hospital quality.

4.4 Ethical perspective

The interface between established clinical registries and quality assessment research projects also raises some ethical points of consideration.

Firstly, data ownership and funding can become an issue in the cooperation process, for instance between publicly founded academic projects and privately funded registries. Sustainable funding is a real issue for clinical registries, and fees for data could stimulate fruitful collaboration on health care quality improvement projects.[34] However, this could also lead to moral and legal issues of data ownership, which need to be further explored.

Secondly, data sharing and trust can be difficult to appropriately manage. Secondary analysis of registry data has been reported to be useful to improve patient care, but the absence of a centralized shared repository of data is regarded as a barrier to its development.[35]

Thirdly, confidentiality, consent and patient information are important points to be discussed. According to the Swiss law for human research, ethical review committees waived patient informed consent for most of the registries dealing with anonymous data.[36] Consequently, patients are usually not informed of the possible secondary use of their data for research projects on health care quality and access to care. This may not be a problem as long as there is a clear benefit from the research on health care quality. However, an ethical issue with patient information would emerge more clearly if

the quality of health care services worsens, or if some groups of patients are stigmatized because they demand more care and thus cost more than the average patient. Better information to patients could help improve transparency in the production and use of data and increase patient's knowledge and agency. As a result, the production and use of observational data could strengthen trustful relationships between health care providers and patients.[37]

5. Conclusion

Sharing of observational clinical data allowed the realization of this before and after study in order to perform an independent assessment of the impact of new hospital financial policies on the quality of hospital treatment. In the first year following the introduction of the reform, the study showed a reduction of the LOS for AMI patients, but no significant modification of the evidence-based treatment delivered to them. The specific measurements of outcomes in pre-defined sub-groups of patients identified one group, namely those with AMI related cardiac insufficiency at admission, who demonstrated a higher risk of in-hospital complications and mortality between the before and after phases. These findings need to be confirmed over a longer period of time, but can already contribute to the discussion about hospital costs, professional practice constraints, quality of healthcare services and their concomitant evaluation.

Ethical approval

AMIS Plus Registry had ethical approval from the Supra-Regional Ethics Committee for Clinical Studies, the Swiss Board for Data Security, and the Cantonal Ethics Commissions. Trial registration: ClinicalTrials.gov (identifier NCT01305785).

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All the authors contributed to the study and have read and approved the final version of the manuscript. CMD carried out the study design, the data analysis, and drafted the manuscript. NBA provided advice during the study, helped conceptualize the presentation of the research results, and reviewed the manuscript. MAP supervised the data analysis, helped organize the manuscript and reviewed it.

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Conflicts of Interest Disclosure

The authors declare that they have no competing interests.

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Lessons learnt

Three main lessons could be learnt:

No translation into practice of findings that could be of public interest

There was a tension between physicians relying on medical indicators from clinical registries and policy-makers using hospital quality indicators from national statistics. Our study findings promoting the necessity to add dedicated measurement for clusters of high-risk patients were challenged by the people involved in the implementation of the new reform at the final symposium presentation, while by contrast well received at the International Forum on Quality & Healthcare. Swiss state representatives did not seem willing to integrate clinical teams' contribution for the evaluation of public policy.

Restricted data sharing and private governance

The steering committee members were prudent about sharing data for external projects such as our academic one. They considered that it was important to respect the anonymity of the participating hospitals to ensure their continuing participation in the registry. They should thus exercise a firm control on data access and use and on collaboration with public or private partners, as well as decide on authorships for publication and funding. Representatives from patient associations, civil communities or public health agencies were not involved in governance.

Patients' passivity

As patient data was coded ("pseudo-anonymised"), it was not necessary to obtain consent for its use. Thus, it was not possible to learn how patients were informed about their data being used or re-used. Patients whom I re-contacted by telephone 3 months and then one year after hospital discharge had no apparent recollection of ever having given their consent for the follow-up study.[75] Neither did they question the fact that I had access to their data. These observations raise the joint issues of the quality of patient information, and a possible passive trust in medical institutions.

[75] *I was asked to re-contact French-speaking patients for the follow-up study, three months and one year after their acute myocardial infarction to obtain information on the rates of morbidity, re-hospitalisation and mortality. These patients were contacted only if they had signed an informed consent.*

5. Ethical considerations concerning the inclusion of pregnant women in clinical registries

Introduction

The story started in Bigorio (Tessin) at the Swiss Society of Biomedial Ethics (SSBE), when Dr Hasselmann shared with me his ethical concerns about the risk of antiepileptic treatment in pregnant women. The following commissioned article went through editorial peer review and was published in December 2015, in the Swiss journal *Epileptologie* 32 (4): 188-193.[76] The article promoted the necessity of gathering more patient data to support the therapeutic decision for pregnant women suffering from epilepsy. It has been acknowledged that generating more data and evidence on the safety profile of drugs in pregnancy improve drug acceptance and reduces patients' distress.[77] As pregnancy registries had already identified the serious in utero complications following the use of valproate (a very effective drug for treating seizure disorders), they could represent a valid alternative to randomized control trials, under appropriate ethical governance.

Three months after the publication, the health scandal about "Depakine^{TM}" broke out in France. Drugs containing the chemical entity valproate had been prescribed in pregnant women despite the known risks of teratogenicity, child malformations and long-term cognitive disorders. In France, 14 322 mothers may have been afflicted. On April 20, 2017, the ASNM (French national public agency for the safety of therapeutic products) published a report which estimated that during the period 1967-2016 between 2150 and 4100 congenital malformations could be the result of valproate use in pregnancy, i.e. an incidence 2 to 4 times higher than usual.[78] The information came from the cross-linkage of datasets from the social security with datasets on congenital malformations, but was limited by the absence of specific registries. Moreover, no precise data on the rate of miscarriage or number of children with long-term cognitive disorders was available.

The article:

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Ethical Considerations Concerning the Inclusion of Women with Epilepsy in Pregnancy Registries

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Summary

Pregnancy registries are essential sources to gain medical and therapeutic knowledge in women with epilepsy who are pregnant or have the desire to give birth. The benefit of treatment for the mother has to be balanced with the prenatal and postnatal risk for the child. To gain reasonable medical evidence, pregnancy registries have to include an adequate and representative number of pregnant women with epilepsy. They will have to observe women during pregnancy and delivery, as well as the foetus respectively the child during its development. In addition, different health care providers have to coordinate their efforts, sharing data while preserving the mother privacy interests. Given these requirements, the multitude of antiepileptic drugs, and the poor knowledge concerning the important implications of the adopted therapy by potential mothers with epilepsy, the rate of patient inclusion in pregnancy registries is still insufficient to provide reliable recommendations for an appropriate medical management. An ethical approach as outlined here aims to overcome some of these obstacles.

Epileptologie 2015; 32: 188 – 193

Keywords: Pregnancy, epilepsy, antiepileptic drugs, pregnancy registries, ethics

Considérations éthiques en lien avec l'inclusion de femmes épileptiques dans des registres de grossesse

Les registres de grossesse sont des sources essentielles de connaissances médicales et thérapeutiques chez les femmes épileptiques enceintes ou désirant donner naissance. Le bénéfice du traitement pour la mère doit être mis en balance avec le risque pré- et postnatal pour l'enfant. Pour obtenir une preuve médicale raisonnable, les registres de grossesse doivent inclure un nombre adapté et représentatif de femmes enceintes souffrant d'épilepsie. Ces femmes devront être suivies pendant leur grossesse et leur accouchement, et le fœtus, puis l'enfant, dans son développement. De plus, différents prestataires de soins de santé devront coordonner leurs efforts et partager des données tout en préservant la vie privée de la mère. Face à de telles exigences, à la grande variété de médicaments antiépileptiques et au manque de connaissances sur ce qu'implique le traitement adopté par les mères potentielles souffrant d'épilepsie, le taux de patientes incluses dans les registres est encore insuffisant pour fournir des recommandations fiables pour une prise en charge médicale adaptée. Une approche éthique, telle qu'exposée ici, vise à surmonter certains de ces obstacles.

Mots clés : Grossesse, épilepsie, médicaments antiépileptiques, registres de grossesse, éthique

Ethische Überlegungen zum Einschluss von Frauen mit Epilepsie in Schwangerschaftsregister

Schwangerschaftsregister sind unverzichtbare Quellen zum medizinischen und therapeutischen Wissen bei schwangeren Epilepsie-Patientinnen oder epilepsiekranken Frauen mit Kinderwunsch, wenn es darum geht, den Nutzen einer Behandlung für die Mutter gegen die prä- und postnatalen Risiken für das Kind abzuwägen. Für stichhaltige medizinische Evidenz bedarf es einer ausreichenden Zahl an Schwangeren mit Epilepsie in den Schwangerschaftsregistern. Erfasst werden müssen Daten zum Schwangerschaftsverlauf und zur Geburt bei diesen Frauen sowie zur Entwicklung des Fetus bzw. des Kindes. Ferner müssen unterschiedliche medizinische Leistungserbringer ihre Anstrengungen koordinieren und entsprechende Daten unter gleichzeitiger Wahrung der Datenschutzinteressen der Mutter zur Verfügung stellen. Angesichts dieser Anforderungen, der Vielzahl an Antiepileptika und des spärlichen Wissens um die bedeutenden Auswirkungen der jeweiligen Therapie auf potenzielle epilepsiekranke Mütter ist die Zahl der in Schwangerschaftsregister eingeschlossenen Patientinnen noch nicht ausreichend gross, um zuverlässige Empfehlungen bezüglich des angemessenen medizinischen Managements aussprechen zu können. Ein ethischer Ansatz in dem hier aufgezeigten Sinne dient dazu, einen Teil dieser Hindernisse zu überwinden.

Schlüsselwörter: Schwangerschaft, Epilepsie, Antiepi-

Ieptika, Schwangerschaftsregister, Ethik

Introduction

Epilepsy and pregnancy could have a combined deleterious effect on one another: pregnancy can worsen the evolution of the epilepsy, and epilepsy and antiepileptic drugs (AED) can complicate the normal course of pregnancy and the in-utero foetal development with immediate or more long-term complications for the expected child. Pregnancy registries represent the most utilized research method to better understand and prevent possible harm to the mother and the foetus. The physical risks of participating in these clinical registries is considered minimal and the possibility to gain knowledge about the underlying disease and the safety of different AEDs is very important for the foetus and child, and for future pregnancies for all women sharing the same conditions. Yet, the inclusion of pregnant women in pregnancy registries as well as the necessary long-term follow-up is difficult to achieve, and as a result pregnancy registries may not provide the necessary results to advise and appropriately treat pregnant women with epilepsy. To improve this situation, it is important to understand the ethical issues governing the participation of pregnant women with epilepsy in pregnancy registries.

1. Pregnancy and epilepsy: in search of more medical evidence

Epilepsy is a disorder that might lead to a more complicated course of pregnancy. Pregnancy can lead to an increase in the number of seizures compared to the pre-pregnancy period, irrespective of any treatment modifications [1]. Seizures themselves can affect the foetus and the delivery [2]. About 3 to 5 births per 1000 are from women with epilepsy. Additionally there are women whose first seizure occurs during pregnancy without a prior diagnosis of epilepsy. There is thus a great need to train health care providers to appropriately care for these women during their pregnancy [3]. For the mother, the foetus and the child, epilepsy is indeed a major challenge to be addressed during pregnancy as well as during the neonatal and postnatal periods. In 2008, a first statement on health outcomes of AED use in pregnant women established guidelines to address the risk of teratogenicity and major congenital malformations as well as minor malformations and long-term cognitive disorders. At this time, a lack of medical evidence was already pointed out regarding the underlying mechanisms leading to pathology and the variant findings across different AEDs or combinations of AEDs [4]. A recent systematic review and meta-analysis confirmed that pregnant women with epilepsy, compared to pregnant women without epilepsy, have a small but significantly higher risk of complications of spontaneous miscarriage, antepartum haemorrhage, post-partum haemorrhage, hypertensive disorders, preterm induction of labour, increased caesarean section, preterm birth and foetal growth restriction [5]. The authors show that most of these complications are found in women taking antiepileptic drugs. This review took into account observational studies published between 1990 and 2015, with old and new AEDs. Meador, commenting on this meta-analysis, has reiterated that knowledge about pregnancy outcomes and adverse outcomes in neonates and children exposed in utero to AEDs is still insufficient [4]. André et al. have also identified the need for more monitoring data as well as randomized controlled studies on newer AEDs [6].

The main limitation for gathering more medical evidence in order to better manage pregnant women with epilepsy lies in the difficulty to include pregnant women in clinical research.

2. Pregnant women and clinical research

Pregnant women are legally considered as "vulnerable persons" for interventional and pharmacologic research concerning AED. This classification was made not primarily because of the risk of the research for the women themselves, but due to the risk for the embryo respectively the foetus (after 9 weeks of pregnancy) and its future development in the neonatal and childhood periods. The interests of the mother and the foetus are obviously closely related, but they could also be in opposition when the necessary treatment of the mother might be harmful for the foetus. The whole situation becomes even more complex because regulatory organs, such as the FDA, EMEA or Swissmedic don't require interventional clinical research in pregnant women or children at the time of a new drug approval. They will ask for complementary monitoring after the drug is approved and marketed. The situation resembles an off-label prescription of AED in a pregnant woman with a moral legitimacy higher than pre-approval interventional research, which could have established the safety profile of the AED in the first place. Some researchers have tried to justify a more invasive approach by advocating that the foetus is a patient holding rights of a person. Their aim was to help the ethical review committee supporting a research that could benefit the foetus with limited infringement of the mother's autonomy [7]. In countries like Switzerland, this approach is difficult to follow, as the foetus is not legally considered a person. In the USA, the National Institute of Health (NIH) has proposed to encourage the development of clinical research in pregnant women and the acquisition of medical evidence for their treatment. The NIH recommendations included 3 major points: identifying specific areas in which clinical research is pressing, supporting ethical committees to accept more

widely research in pregnant women, and reclassifying pregnant women from "vulnerable patients" to a mere scientifically "complex population" [8]. In order to better understand the barriers to perinatal research and randomized controlled research in pregnant women, Brandon et al. have conducted a qualitative research with investigators and members of ethical committees in the field of mental health in pregnant mothers. They identified four issues that are equally relevant to epilepsy and pregnancy: i) the difficulty of identifying a control group with placebo or reference treatment; ii) the safety concerns for the mother at risk of undertreatment, for the foetus concerning congenital and teratogen risks, for the child concerning its cognitive development; iii) the demanding process of inclusion of participants and the conceptual difference between clinical care and clinical research; iv) the possible restriction of the autonomy of pregnant women due to their possible low level of comprehension, the consideration of the relationship between the father and the foetus/child, and the risk of breaches in confidentiality due to the involvement of numerous research stakeholders [9]. Randomised clinical research with pregnant women would be better accepted in the absence of off-label treatment. Yet, in epilepsy and pregnancy, the main research concerns just such off-label research looking for the effects of AEDs on mothers, foetuses and children. Acquiring strong medical evidence in pregnancy and epilepsy is for these reasons difficult, and until today medical research has relied upon observational studies and clinical registries. These pregnancy registries can moreover help facilitate the design of possible future randomised controlled studies.

3. Pregnancy registries

Pregnancy registries have been widely used to learn about pregnant women with epilepsy treated with AEDs. The UK Epilepsy and Pregnancy Register, for example, enabled the identification of the increased risk of major congenital malformations under a combination therapy or a therapy with valproate [10]. The Florida Medicaid registry showed that these types of results could be translated into practice, as the use of valproate decreased significantly favouring second-generation AEDs [11]. Nevertheless, registries have their limitations. Their target population is not always well defined and the findings may not be generalizable. Information on exposure to AED may be only partial or inaccurate, outcomes data can be incomplete as spontaneous abortions or stillbirths might not be reported. Other registries such as the National Swedish Medical Birth Registry, or the European registration of congenital abnormalities and twins (EUROCAT) may provide information that could help identify complications due to the in-utero exposure of AED, but these registries do not provide the basis to assure the best management of pregnant women with epilepsy [12].

The Agency for Healthcare Research and Quality (AHRQ) published in their user guide for clinical registries a special chapter on pregnancy registries (pp. 135-169). This guide identifies the variables commonly collected and the issues to consider for interpreting the results of these registries [13]. Stating that pregnancy registries are different from other clinical registries, the guide requires that women be enrolled prospectively, a meaningful control group established, sufficient statistical power achieved, and that accurate data on drug exposure be collected. Additionally, to measure reproducible outcomes in pre-and postnatal periods, different sources of information from various health care providers are required.

The AHRQ's definition of pregnancy registries ("Pregnancy registries are prospective observational studies specifically designed to collect clinically relevant data and provide information for treating or counselling not only women who are pregnant but also women of childbearing potential") concerns both pregnancy registries that collect data on epilepsy treatment, and pregnancy exposure registries required for the post-marketing safety studies of new AEDs. Post-marketing registries are not randomised and may harbour limitations when a pharmaceutical company, only interested in its own product, is funding them. Therefore it is important to identify the different types of pregnancy registries i.e. national registries, independent academic registries or pharmaceutical company registries, and to better understand their purpose, modes of enrolment, types of measured outcomes or possible control groups and duration of follow-up.

The epilepsy Therapy Development Project Work Group on Teratogenicity has reviewed pregnancy registries and methodological aspects [14]. To avoid bias and confounding factors, they recommend that all eligible women be included prospectively and that the included women should accept to provide all information necessary for profiling the risks of complicated pregnancy or foetal problems. Ideally, the participating women would contribute to the regular monitoring of AED exposure concerning the type of drug, dose, and blood levels. In addition, they would be asked to accept to be part of the post-partum follow-up questionnaire, including measurements of pre-defined possible outcomes for the neonate and the child.

These requirements may however be too demanding for women from the control group who will have to balance the burdens of the study with a possible contribution to a common good of research. Additionally, the findings of early malformations or late cognitive disorders will depend upon the length of child observation, the longer the observational period, the higher the possibility to identify these disorders. The assessment of these outcomes thus depends heavily on the rate of women and children lost to follow-up in the registry.

To sum up, the inclusion of epileptic women in preg-

nancy registries requires quite constraining demands from the participants in order for the registry to be scientifically valid. These conditions may dissuade the pregnant women to consent to participate in the pregnancy registry and finally make the registry futile. As a result, and in order to gain the necessary knowledge for the management of pregnant women with epilepsy, ethical issues have to be further explored about the decision process to create and run pregnancy registries in women with epilepsy.

4. Ethical considerations for developing pregnancy registries

The aim of clinical registries in pregnancy and epilepsy is not only to gain scientific knowledge and safety data on the use of AED, but also to provide counselling and support to epileptic women who are pregnant or are considering pregnancy. The previous section shows that creating and managing pregnancy registries is a complex process. The main issues concern the identification of the most appropriate population with epilepsy to be included in pregnancy registries, the information provided to the selected women, and the responsibility of the participating health care providers in the management and communication of the results from these registries.

In contrast to the potential heavy burden of participating in pregnancy registries, the direct benefits for the mothers included in the registry are relatively small. They can expect better information and follow-up care of their epilepsy during this and future pregnancies. The foetus being exposed to possible maternal seizure and AED will have no direct benefit, with the exception of a possible long-term follow up after birth, which could detect and possibly mitigate minor malformations and cognitive disorders. Yet, few studies have followed the children beyond 6 years, and it is still uncertain as to whether negative effects on IQ might be reversible [15]. Other pregnant women with the same kind of epilepsy as well as their foetus may benefit from the findings, if the clinical registries are scientifically valid and powered statistically, and if the pregnant mothers are exposed to the same type and dosage of AED. All these requirements for generalizable and useful clinical registries are still burdened with a high level of uncertainty in terms of measured outcomes and scientific validity. This makes it difficult to include and keep women in the registry.

French et al. have reviewed the ethical issues governing participation in clinical registries and dissemination of their findings [16]. As pregnancy registries aim to generalize knowledge, their design and conduct depends upon the legal requirements of research on human subjects, and informed consent from participants is necessary. However, there are circumstances in which regulatory institutions recognize that AED side effects can be reported directly by health care providers in a voluntary or even in a mandatory way. The management of pregnancy registries has to balance moral obligations towards respecting the autonomy of the mother and her informed consent with the public health interest to have safe AEDs. As pregnancy registries do not offer the same strength of medical evidence as randomized controlled clinical trials, the public regulatory institutions should communicate rather cautiously. They usually have to consider a bundle of factors for labelling AED in pregnancy, based on the number and seriousness of events reported, the evaluation of a possible causality following the intake of AEDs, and the balance of maternal benefit versus foetal risks. Therefore, the medical and research epilepsy communities are responsible for creating the best possible quality pregnancy registries, including the appropriate women with epilepsy to gain valid scientific information.

In addition to the well established requirements of good clinical practice and legal obligations, **Table 1** proposes an ethical approach to guide the conduct for pregnancy registries, which identifies the balance of powers between mother, other members of the family, healthcare providers and public or private institutions.

The main values are related to autonomy, privacy, trust, common good and justice. Additionally, the concept of agency strengthens the importance of knowledge and information in order for the women to exercise their autonomy and for the health care professionals to act in a responsible way. Agency is considered as the freedom to achieve whatever the individual, as a responsible being, decides to achieve [17].

Education and information are crucial at all levels: i) for women with epilepsy in order for them to consent to participate in the pregnancy registry and to accept a long-term follow-up; ii) for the partner to support the mother's commitment to the registry and the child's medical and psychological follow-up; iii) for the different health care providers to share data and coordinate the care in a transparent and confidential way; iv) for public health administrators publishing guidelines to assure the protection of women and foetus even if they go against commercial interests.

Awareness and knowledge of the impact of epilepsy and AED on pregnancy have been assessed in women with epilepsy. Their knowledge was found to be insufficient [18]. There is a clear demand for more information, especially in women aged less than 35 years [19]. A qualitative approach with focus groups identified this need for information particularly as most of the women concerned had an unintended pregnancy [20]. These findings emphasize the importance to develop preconception counselling for women with epilepsy and their partners, and to foster shared decision-making [21].

Health care professionals are not only accountable for informing women and their partners, but they should also work in a coordinated network to guarantee the confidentiality of the registry data, the informa-

Table 1: Ethical considerations for the inclusion of women with epilepsy in pregnancy registries.

Cluster of data to be collected during the lifespan of the pregnancy registry	Persons concerned in first place	Health care providers involved	Issues for inclusion	Ethical concepts
Epilepsy disease and pregnancy: history, former pregnancies, comorbidities, evolution during pregnancy, complications of pregnancy or epilepsy	Mother	GP Neurologist Obstetrician Mid-wife	Consent: Mother Information Confidentiality Data sharing Coordination	Autonomy Privacy Trust
Exposure to AED: Nature, modification (type or dosage), compliance, combination, other treatment non-AED (e.g. folic acid)	Mother	GP Neurologist Obstetrician Biologist (laboratories)	Consent: Mother Information Coordination Public health interests Private (Pharma) interests	Autonomy Common good Trustworthiness Transparency Conflict of interests
Foetus: development, death, major malformations, minor malformations	(Foetus) (Mother/ Parents)	Obstetrician Paediatrician (Radiologist/images)	Parent Information Data sharing Confidentiality Linkage to birth registries Dissemination of results Compensation of side effects	Agency / accountability Justice
Child: malformations, cognitive disorders, other disorders	Child (Parents, Family)	GP Paediatrician Psychologist School teacher	Parent Information and consent to follow-up Coordination Access to data Dissemination of results Compensation of side effects	Autonomy Agency / accountability Privacy Justice
All	Mother and future mothers with similar conditions	Registry administrator Steering committee (governance)	Confidentiality Transparency Scientific validity Data access Feedback to health care providers and regulators Funding Conflict of interest Publication of results	Trustworthiness Prudence Accountability Conflict of interests Justice

tion given for the benefit of the mother, and to safeguard the scientific value of the registry. The registry steering committee should moreover behave with prudence in the interpretation and dissemination of the registry results. Furthermore, transparency and trust between participants should be maintained during the lifespan of the registry, and facilitate the inclusion and retention of the highest possible number of mothers and children.

In addition to the necessary defence of the common good of managing future pregnancies in women with epilepsy and gaining knowledge about the safety profiles of AEDs, public institutions should respect justice and support social acceptance of the unpredictable future of mothers with epilepsy, their foetus and their child. Justice can be seen as the main argument for supporting inclusion of women in the registry, if they experience the support of the community and feel encouraged to reciprocally contribute to pregnancy registries.

Conclusion

This brief review on epilepsy and pregnancy has identified the difficulty of appropriately balancing the benefit of the epilepsy treatment for pregnant women, whilst at the same time protecting the foetus and preserving a normal development for the new-born. Clinical research is difficult to undertake with pregnant women, who will typically be considered as "vulnerable subjects". Pregnancy registries offer a good observational research alternative, as long as they not only fol-

low good clinical practice and legal obligations, but also include the appropriate population for a long enough period. This paper proposes ethical considerations able to guide the inclusion of women with epilepsy in pregnancy registries. This approach aims to strengthen the respect for patients' autonomy and privacy, and promotes the common good of future pregnant patients and the foetus. In practice, patients' agency and healthcare professionals' accountability should be developed further. This can be achieved firstly through the education of women with epilepsy, secondly through sharing information in a transparent and confidential way within a coordinated network of healthcare providers. Finally, this will also require just institutions able to react quickly, disseminate findings with prudence and assure social protection in case of deleterious effects of antiepileptic treatment for the mother or foetus.

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Lessons learnt

The three following lessons were learnt:

Sharing patient data for public interest

The benefits of sharing patient data are twofold: i) sharing amongst all healthcare providers optimizes clinical management of epileptic mothers of childbearing age, and ii) sharing patient data for research purposes benefits future mothers. More data is necessary not only for valproate, but also for all new chemical entities used against epilepsy. Clinical registries are essential sources of patient data, but it is difficult to fund registries to share data comparing several antiepileptic drugs as pharmaceutical companies target research funds at their own products, avoiding head to head comparisons. This raises the additional issue of accountability for public interest. Moreover, mothers of childbearing age and families are mobile, and sometimes patients want to escape from the burden of epilepsy or bipolar disease, thus making long-term observation a challenge. A national registry should be trustfully governed for the long-term with the active participation of patients and families, and incorporate follow-up for children. Public intervention is again justified.

Difficulties translating patient interest into practice

Ethical considerations should facilitate pregnancy registries, ensuring the application of the non-maleficence and precautionary principles, and the respect of human rights for medical care and scientific progress. This implies the public health duty to effectively gather and disseminate all relevant information. The "Depakine™" case exemplifies the failure of public agencies regarding scientific findings and the ethical recommendations for collecting patient data as suggested in the publication. The absence of appropriate patient datasets delayed the speed of reaction of the government and the pharmaceutical company involved. This has reinforced the feeling of distrust amongst patients, and led to conflicts between the different stakeholders.

Difficulties protecting patient rights

The rights of pregnant women are complicated by concerns for the health of their foetus. National legislation does not usually recognize the foetus as a right-bearer, but the mothers may (and the fathers as well). Policy-makers should protect these women with better education, information and support. Healthcare providers are also obligation-bearers towards mothers and their families. They should keep their own knowledge up to date, inform patients and their families, and share patient data in a confidential, coordinated healthcare network. Appropriate governance should support these efforts.

6. Conclusion

These two case studies identified justified reasons for public interest, but this public interest was not translated into practice and vulnerable populations were worse off. Moreover, public health authorities did not appear willing or able to improve the level of implementation. Privacy rights were not discussed in the first place, and in the cardiology case patients were passive about possible issues with information, consent and governance. In the case of pregnant mothers, issues related to the seriousness of drug adverse effects on foetus and child, and to the negligence of public agencies were masking privacy issues. In both cases, patient rights to have access to appropriate information, to exercise autonomy and to act accordingly were disregarded and not adequately documented. Justified reasons for public interest could have been hindered because of competing political, economical, and commercial interests. As a result, it was difficult to balance public interest and patient rights as they were not in a competitive situation, but both were nevertheless undermined.

Clarification of rights and interests would necessitate adjusting the ethical governance for patient data. Healthcare professionals, health administrators and policy-makers are in a central position for ascertaining public interest over private ones, for ensuring and enhancing patient rights, and for creating and using clinical registries to provide more empirical evidence to improve their work. It is therefore worthwhile examining their experience and ethical awareness regarding patient data. That is the aim of the next part of this report.

PART III. QUALITATIVE APPROACH

In the introduction, the need to balance expected public interest with a morally acceptable overriding of patient rights was acknowledged in order to keep pace with the fast technological development of large patient data sets. Nevertheless, the study of the former cases indicates that an inappropriate governance of patient data could undermine the quality and safety of patients' treatment, impact the fair evaluation of healthcare policies, and neglect patient rights. The attribute "inappropriate" is used broadly, as knowledge about the healthcare stakeholders' awareness of these possible ethical issues with governance is lacking.

I used qualitative research to ascertain how the stakeholders perceived the ethical issues, and how these issues could affect their roles and responsibilities regarding patients and their data. Qualitative methods are well suited to contextual research, describing the situation as participants experience it, testing their understanding of a situation or a phenomenon, and analyzing opinions. Although it does not aim at representativeness and generalisability of the findings, qualitative research provides an in-depth understanding underlying how people think and act according to a given situation or phenomenon. The methodology is codified and it requires all steps to be documented. Such an approach facilitates the exploitation of new insights into the ethical management of patient data and makes the acquired knowledge transferable.

7. Patient data in the patient's voice? A qualitative study on Swiss healthcare stakeholders and patient data

On behalf of my two co-authors, Dr. Holger Baumann who has contributed to the analysis and reviewed the paper, and Prof. Nikola Biller-Andorno who has contributed to the study design and reviewed the paper, I submitted a formatted version of the following article to the peer-reviewed journal *BMC Medical Ethics* (BioMed Central) on April 21st, 2017.

The submitted manuscript:

Patient data in the patient's voice?

A qualitative study on Swiss healthcare stakeholders and patient data.

Corine Mouton Dorey, Holger Baumann, Nikola Biller-Andorno

ABSTRACT

Background

There is a growing interest in aggregating more biomedical and patient data into large health data sets for research and public benefits. However, collecting and processing patient data raises new ethical issues regarding patient's rights, social justice and trust in public institutions. The aim of this empirical study is to gain an in-depth understanding of the awareness of possible ethical risks and related moral obligations among those who are involved in projects using patient data, i.e. healthcare professionals, regulators and policy makers.

Methods

We used a qualitative design to examine Swiss healthcare stakeholders' experiences and perceptions of ethical challenges with regard to patient data in real-life settings where clinical registries are sponsored, created and/or used. A semi-structured interview was carried out with 22 participants (11 physicians, 7 policy-makers, 4 ethical committee members) between July 2014 and January 2015. The interviews were audio-recorded, transcribed, coded and analysed using a thematic method derived from Grounded Theory.

Results

All interviewees were concerned as a matter of priority with the needs of legal and operating norms for the collection and use of data, whereas less interest was shown in issues regarding patient agency, the need for reciprocity, and shared governance in the management and use of clinical registries' patient data. This observed asymmetry highlights a possible tension between public and research interests on the one hand, and the recognition of patients' rights and citizens' involvement on the other.

Conclusions

The advocation of further health-related data sharing on the grounds of research and public interests, without due regard for the perspective of patients and donors, could run the risk of fostering distrust towards healthcare data collections. Ultimately, this could diminish the expected social benefits. Interests in patient data should not stand in for the patient's voice. On a normative level, this study thus provides material from which to develop further ethical reflection towards a more integrative approach involving patients and citizens in the governance of their health-related big data.

KEY WORDS

Agency. Ethics. Healthcare stakeholders. Justice. Patient data. Patient rights. Reciprocity. Clinical registries.

INTRODUCTION

Patients' healthcare data is used by a range of stakeholders, for a variety of different purposes, and this picture is rapidly changing. Greater digital integration of large health datasets is advocated for its benefits to clinical research and healthcare practice, blurring the distinction between research activities and medical care. [1] The expected social benefits are estimated to be considerable, especially with genomics and precision medicine aiming at more targeted and safer treatment for patients. Consequently, new approaches to informed consent are being examined, to facilitate the collection and use of routine patient data into big health data networks. Indeed, it is unrealistic to obtain informed consent for secondary uses of patient data, when the purposes of such uses are not known at the time of data collection. [2] As a result, patients' rights to be informed and to give consent before their data is shared may not be respected, infringing upon the fundamental human right to privacy. Moreover, many patients are unaware of possible conflicts of interests regarding data sharing, including for commercial purposes. It seems that existing protective laws and ethical arguments do not fully address these new challenges that are developing, especially with regard to possible conflicts between patient rights and public interests. [3]

Traditionally, clinicians have been responsible for protecting patient privacy, with their moral obligations stemming from deontological rules and trust agreements. However, nowadays the management of patient data involves a more diversified population of health-related stakeholders, such as experts in digital technology, genomics, and cost-effectiveness measurements. The healthcare system is becoming more business-like, required to continuously improve medical practices and learning, whilst remaining economically sustainable, through cost-effective service delivery. [4] Besides this, insufficient anticipation of the potential for attacks on patient rights, with the rapid development of large patient data sets, could have serious repercussions for patient privacy, as well as social group protection and trust in physicians and public institutions. [5] It thus seems necessary to better understand the ethical awareness of healthcare stakeholders (HCS) who contribute to the establishment of large patient data sets. To this end, we have chosen to investigate empirically HCSs' experiences and ethical consciousness, with regard to patient data, in the setting of clinical registries in Switzerland.

Clinical registries (CRG) are a good proxy for large patient data sets. They use observational methods to gather patient data in order to assess medical outcomes and processes at population levels. [6] They cover a large healthcare domain, extending from clinical quality improvement, safety monitoring and cohort studies, to clinical research and policy evaluation, and they are confronted with similar digital changes and challenges as those of the wider field of patient healthcare data. There is growing concern for patient rights, as it could be possible to re-identify specific individuals, when CRGs built with de-

identified or anonymised data are linked, or include genetic information. There is also concern that aggregated information could stigmatize and harm some groups of patients and citizens, because of their disease, lifestyle or extra healthcare costs. HCSs should therefore be aware of their moral obligations when they decide that a clinical registry is necessary and when they decide to contribute to it.

Switzerland is a country with robust privacy rights written in its Constitution "Everyone has the right to be protected against the misuse of their personal data". [7] Healthcare data are considered as sensitive personal data. To collect and use them, it is necessary either to have a legal basis, to demonstrate a dominating public interest, to have informed consent, or to have anonymous or coded data. [8] In comparison to other countries such as the United Kingdom, Australia, Sweden or Denmark, CRGs are not extensively developed in Switzerland. [9] However, this is changing. The Health2020 report promotes integrated management, cost-savings and better data for the health system. [10] Therefore, initiatives in favour of e-health, database linkage and national data sharing are facilitating the collection and use of routine patient data, and consequently the development of CRGs. However, to date, there is no empirical data on HCSs real-life experiences of CRGs.

This paper reports a qualitative study designed to investigate Swiss HCSs' ethical awareness regarding the management of patient data in real-life settings where CRG are decided, created, managed and used. The main finding is the emergence of a possible tension between public interest and patient rights due to the HCS' asymmetrical awareness of ethical issues. The study helps to understand and explain the factors at the root of this tension. It thereby motivates further normative reflections on the ethical approach that is taken for building large patient data sets, i.e. an approach that emphasizes a fair distribution of benefits and burdens amongst all stakeholders, patients and citizens included.

METHODS

A thematic analysis, derived from Grounded Theory, and using semi-structured interviews, was selected to explore HCSs' individual experience and reflections. [11] The cantonal research ethics committee declared the study to bear no ethical risk (KEK-StV-Nr. 42/14). Participant information sheets were sent in advance by email to all possible interviewees. At the beginning of the interviews, consent forms and confidentiality agreements were explained, signed and exchanged.

In order to have a wide diversity of roles and experiences, a purposive sampling frame selected three targeted groups of HCSs:

- Group (M) comprises physicians involved in "Making" CRGs. Including two sub-groups, frontline physicians collecting data (M') and data centre managers (M'');
- Group (R) includes people "Reviewing" CRG protocols in research ethical committees;
- Group (A) includes people "Asking" for CRGs i.e. sponsors, regulators and policy-makers who require, fund or control the creation of CRGs.

The study sample did not include CRG patients, as their identities were anonymised or coded, i.e. not accessible. Thus, the abbreviation HCS used for respondents does not include patients. Recruitment was based on the information provided by the Swiss Medical Association "FMH" platform for CRGs [12], through the first author's direct contacts and by snowballing. Sample size was determined by data saturation, i.e. the point at which additional data fails to generate new information. A range of 15 to 25 interviews was foreseen, with group M expected to be the largest group, as its members are the closest to patients.

Documents to participants were produced in 3 languages: French, English and German. The participant information sheet included a definition of clinical registries based on the U.S. Agency for Healthcare Research and Quality (AHRQ) document. At the time of the interview, this definition was read and the interviewees were asked to fill in a matrix, based on the AHRQ definition, to identify their own CRG experience [see Additional file 1].

The interview topic guide was developed with the help of an ad-hoc literature review identifying an initial framework of possible ethical issues to be raised by CRG stakeholders [see Additional file 2]. The topic guide included three items:

- Participants' personal experience of CRG. Assessed with open-ended questions;
- General CRG issues. Interviewees were encouraged to think aloud. Prompt cards were used to highlight potential ethical issues and blank cards were used to record other emerging issues;
- Possible recommendations for future CRGs.

The topic guide was reviewed by external experts in qualitative research and epidemiology, and tested with native-speakers of the three languages. An additional file shows an example of the topic guide used for group M [see Additional file 3]. For groups R and A, the first item was slightly modified, so as to be more appropriate to these participants' roles and experiences. To ensure a relaxed and trusting atmosphere, a methodology of face-to-face interviews, at the interviewees' location, was chosen. Interview proceedings were recorded in a qualitative research journal.

Interviews were conducted by one of the authors (CMD), who is trained in qualitative methods. Interviews took place between July 2014 and January 2015, and were conducted in English, French and German. Thirty candidates were contacted, 22 accepted to participate. Reasons provided by those who declined participation included lack of time (n=5) and a lack of experience with clinical registries

(n=3 who then provided the name of a more appropriate candidate). Saturation was recognised after the first 15 interviews, however the study continued as 4 more interviews had already been planned. To confirm saturation, three more interviewees, from fields outside of the initial sampling frame (quality management, patient association, clinical ethicist), were selected using a discriminative sampling approach and interviewed. The interviews lasted on average 59 minutes (median 60 minutes). All interviews were audio-recorded and transcribed verbatim. The transcription was done on a continuous basis and data were exported into NVivo™ software for Mac. Coding and categorisation processes were gradually updated. First-level codes were regrouped in an iterative process between data collection and analysis. Memos were written throughout the research process. The first interviews were reviewed using the final coding book. Facilitated by NVivo™, the thematic analysis procedure used successive matrices to cross-tabulate different categories of response. Our interpretation followed a mix of deductive (initial framework-informed) and inductive (theory-generating) approaches, with a continuous comparison method to interpret expected and emergent themes. [13] The final analysis followed the OSOP method [14], resulting in a map of key themes. This contained explanations of patterns and linkages, analysis of deviant cases, and allowed us to generate inputs for an emergent theory.

The first author coded all the transcripts, developed themes and proposed the final analysis. To finalize the coding book, colleagues, acknowledged at the end of the article, independently coded a sample of de-identified transcripts in English, French and German. As educational background can influence qualitative interpretation, it is important to note that the first author has a medical background and further education in bioethics and empirical research. The co-authors, who enriched and validated the analysis, have backgrounds in biomedical ethics, philosophy and medicine.

FINDINGS

Respondent characteristics

Table 1 shows the participants' demographic information. Health domains were diversified. The region of Zurich and the public health sector were the most represented. A majority of interviewees were male and had a medical background. This gender imbalance was unavoidable. Most of the interviewees crossed more than one box of the definition table, indicating that they had experience in more than one type of CRG. A few interviewees (mainly M') did not find it relevant to differentiate between CRGs for research and CRGs for quality improvement, as for them, these different goals require the same data, and indeed, the patients involved are the same.

Table 1. Characteristics of the interviewees (n=22)

Male (n, %)	19 (86%)
Age (median, range)	55 (39-68)
Years of experience with clinical registries (median, range)	14 (1.5-27)
Experience working abroad >1 year (n, %)	12 (55%)
Number of registries currently involved in (median, range)	2 (1-6)
Current main role regarding CRg (n)	
First line data collectors (M')	6
CRG manager (M'')	5
Initiators/ sponsors (politics, federal administration, patient organisation, quality management)	7
Reviewers (cantonal ethics committee, clinical ethicist)	4
Education background (n)*	
Medical doctor	16
PhD science	5
Economy	1
Law & humanities	2
Nurse	1
Health care domain (n)	
Main Medical fields	
Anaesthetics	1
Cardiology	1
Dermatology	1
General practice	1
Infectious diseases	1
Nephrology	1
Paediatrics	1
Public Health	2
Other HC fields	
Data management direction	2
Quality management	1
Health administration	3
Ethics	4
Health policy	3
First language (n)*	
German	17
French	6
Italian	2
Places of work (n)	
Geneva	1
Lausanne	3
Fribourg	2
Bern	4
Zürich	12
Sector (n)	
Public	19
Private	3

* Interviewees could satisfy 2 characteristics. CRG: clinical registries

Categories and gradual findings

Five anticipated categories, identified in the initial framework of expected ethical issues, where used as prompt cards:

- patient information
- data ownership
- trust
- moral obligations
- confidentiality

Throughout the interview process, additional issues arose concerning data set linkages, data sharing, communication between stakeholders, feedback of results, quality of data, utility of CRG, funding issues and legal constraints. Interviewees used blank cards to highlight the additional issues of financial needs, data quality and inter-operability Therefore, to encourage reflection on these concerns, without leading the interview, two supplementary enabling cards were added after the first 6 interviews, and were also used as supplementary anticipated categories of analysis:

- communication-networking
- long-term value

These seven initial categories were used in the coding process, as well as the following emergent categories: perceived CRG definition and knowledge, legal aspects, transparency, governance, beneficence, similarities with biobank, empathy with patients, and a parking-lot category named "other possible ethical issues", which included elements of card strategy and prioritization. Comparing and looking for interactions across these categories, three broader themes have been identified for HCSs: behaviour, attitude and strategy.

Thematic analysis

Respondent behaviour

Legal concerns were extensively discussed, despite the absence of specifically legally oriented questions in the topic guide. (Table 2) Swiss law confers upon HCSs the right to record and use CRG data. It assures that HCSs respect privacy rights, confidentiality, anonymity-coding rules and informed consent. In effect, this judicial backbone strengthens professional deontological rules requiring that HCSs "first, do no harm" and abide by their professional secrecy duty.

Table 2: Healthcare professionals' behaviour – Legal norms

Necessity of legal norms:	**Interviewee comments (A, M', M'', R indicate group affiliation)**
For opt-out preferential option	[M''] *"First of all we had to fight for the legal fundaments, because if you don't have a legal fundament then in cantons some hospitals would simply refuse to deliver the data, which would then lower our response rate below the international acceptable limit. So, legal, a legal baseline is very important…There is a moral obligation to use data, to improve quality of life of patients, therefore to have good quality data and completeness. It means obligation to have an opt-out...There is a conflict of moral obligation with the data protection officer who wants first to protect individual privacy. That is why a law will help for [name of the clinical registry] registry."*
As a basis for confidentiality	[M']: *"Confidentiality is very important to get that your patient information is given and that the patient is not disappointed. Depends on what you do, I mean, organ transplant recipients everybody knows they are transplanted so there is not that much to hide. With HIV that's much different. You have more concern in the HIV cohort study."*
To better define research	[R] [translation] *"There is a clear contradiction in the definition of a clinical trial in the law and in the ruling order. As a result, researchers want to take advantage of this…we have recurring discussions on this question, whether it is research or not. And researchers put a lot of energy and intellectual efforts to argue that in this particular concrete case, it is not research."*
With guidance for implementation	[M''] *"Well I mean, there is the legislation and so on, but maybe there is probably not enough guidance in practice, that is known by the people who are developing registries and using them."*
Applied with an idea of prudence	[M'] "*That's an ongoing discussion. Because it's a pain. … if you have a question that is beyond an individual patient's treatment, basically it's science. … So my interpretation is that we have to ask for every project for specific approval for the specific question, which is what I am doing...but not everybody in the cohort study is of my opinion and we have heated discussions because it makes a big difference if you have 40 projects running in this cohort study which are scientifically looking at the cohort study and all these 40 need ethical approval or don't. … you can go through any kind of audit and I know if you don't have ethical permits you are lost. You are dead before the game even starts; because for a lawyer, if you have no document, you're dead."*

Mandatory CRGs for healthcare statistics were presented as a good example of an underlying stable structure and stable financial basis. Additional ad-hoc research purposes could thus be managed by simply adding other predefined items into the case report forms of the initial registry. Regarding non-mandatory CRGs, the interviewees were fighting for a legal basis for opt-out consent procedures, rather than an insistence upon opt-in consent, to facilitate CRG recruitment. Some HCSs mentioned their discretionary power in addressing confidentiality or informed consent issues depending on the types of patients included, for instance with HIV patients.

Major concerns pertained to the difficult distinction between clinical care and research CRGs. In practice, the question raised by respondents was whether they should submit projects that are not easily classified to a research ethical committee CRG, as illustrated in the following examples:

- Research CRGs with anonymous or coded data,
- Quality CRGs delivering generalizable output,
- CRGs including biomarkers and genomics data,
- Secondary uses of CRG collected data for research projects that were still unknown at the time of patient recruitment.

Confronted by this issue, HCSs behaved in heterogeneous ways. Many viewed the HRA (Human Research Act) rules, in particular the obligation for a written informed consent, as too burdensome. Some research ethical committee members suspected that investigators deliberately try to avoid HRA legal obligations when designing CRGs. Some interviewees were working on new consent procedures, or wanted to further clarify the guidelines. In contrast, a few respondents from group M' said that they were systematically applying the HRA when the CRG purpose involved the collection of data not directly linked to patient treatment; their motivation was to protect patients, but more importantly to protect themselves from legal risk. Whilst physicians had a wider conception of research based on the purpose and use of the CRG, lawyers considered CRGs with non-identifiable data as monitoring tools, and not as research, stating that they could subsequently correct their approach with a retrospective ethical authorization if CRG results were published as research.

Besides these legal aspects, interviewees' behaviour focused on the operational management of CRGs, their long-term value being dependent on data quality, standardization, completeness, system interoperability, and financial conditions. (Table 3) All participants recognized these standards as necessary conditions for the benefits of CRGs to be realised. Given the time spent on CRGs by healthcare providers, and sometimes patients (longitudinal follow-up), they wanted to ensure that CRGs deliver good quality information, to aid better decision making. Everyone insisted on the quality of the whole process of collecting, aggregating, controlling and analysing CRG data as especially important, but some interviewees were uncertain about how to ensure the best quality of data. The further interviewees were from the data collection process, the stronger their doubts about CRG quality and value was. The long-term operation of CRGs posed specific problems. Interviewees mentioned a risk of lower quality and reduced rate of patient inclusion each time a clinical team changes, and the corresponding need to continuously inform and train investigators. Securing financial resources was also highlighted as potentially problematic for the long-term management of CRGs.

Table 3: Healthcare professionals' behaviour – Operational rules

Good operational management	Interviewee comments (A, M', M'', R indicate group affiliation)
Importance of data quality	[M', *principal investigator]: "The crucial aspect of a registry is what kind of data do you put into this registry, and how well is this data controlled, and how good is the quality of this data in the end. This is what really counts… It is difficult you know; I'm continuously involved if there are some questions about definitions. Definitions always evolve. How do you, what kind of data point do you collect?"*
Trust in quality	[A]: *"My special problems with the evaluation registries as we call them, is that the physicians deliver the data to these registries, enough data, good quality data and that you have registries that you can use! That was always a problem and it is a problem: how to make them mandatory or how you can guarantee that the data are full and good. That is always the problem."*
Good management needs human and financial resources	[R]: [translation] *"Money is necessary, for infrastructure and people, but public services are always reluctant. …With the National Research Fund, it is discouraging, they don't want to engage themselves in the long term…a better coordination should exist between institutions and the National Research Fund, with a guarantee at the launch of a project that institutions will take over later."*
Issue of definition of quality	[M']: [translation] *"It is difficult to measure quality in medicine. What is it? Is it patient satisfaction? Is it cost-effectiveness? Because when parliamentarians speak about quality, it is completely wrong: for them, it is quality – price ratio; when they think quality, it is profitability, and for me it is not. Quality has nothing to do with money…because if you want true quality, it would be expensive."*
Steering committee to set the rules	[M']: *"You need some clear rules how will these data and samples be used, you know, by whom? And we have actually modelled ourselves a bit along the HIV cohort study which has a scientific committee; so, whenever somebody has a research question, he has to go there, has to write the proposal, we review the proposal and we accept the proposal or not."*
Utility is essential	[M'']: *"If we collect data, we have to organize everything that we can create as much information out of this data as possible. So, I think it is, it's only serious to collect data if they can be used for something. If they are just collected and if they are not, cannot contribute to improve the system, then it is, I think it is not ethical to collect them."*

Respondents' operational focus was most commonly related to data quality. Some of them used the expression "garbage in, garbage out" to explain how the quality of data production influences the quality of CRG output. However, their approach to the concept of quality was more complex when CRG outputs were themselves used as quality indicators for comparative healthcare effectiveness. Not all physicians agreed with the idea of better quality at lower costs.

To guarantee CRG long-term value, all interviewees insisted on the necessity of working with a steering committee that would set the operational rules of good clinical practice, data access, research authorship, thus improving communication and fostering trust between CRG agents. The usefulness of CRG data and outputs was an important factor for delivering CRG benefits. Interviewees pointed out the risks of collecting the wrong data, or in the wrong way and generating waste ("data cemeteries"). The prospect of not using CRG information was considered as worse than that of misusing it.

Respondent attitude

The "attitude" theme revealed HCSs' thoughts, beliefs and values towards themselves, peers, patients, and society, i.e. disclosed something about their moral obligations. A majority of interviewees declined to comment on the card on moral obligations, touching and looking at the card, but then moving on to comment on another card instead. Some HCSs considered the word "moral" too judgemental or inappropriate, and refused the "outing" on moral obligations. Nevertheless, morally-connoted words like "right" and "wrong" were frequently used when they thought aloud about patient information, confidentiality, trust and long-term value. A few HCSs referred to moral obligations as the roof governing the whole CRG activity. Interviewees' attitude varied between the different groups, based on their proximity to patients and the existing deontological code for physicians.

i. Attitude towards themselves and other HCSs (Table 4)

Group A said that moral obligations were implicitly handled in their political engagement when they were making laws. They recognized the moral obligation to apply legal norms, and to modify the legislation if necessary. Group M was aware of professional duties to inform patients, to respect secrecy, to accept peers' scrutiny and finally to participate in CRGs as in other types of activities that would improve healthcare quality for patients. With regard to patient information, their motivation was not only deontological, but also utilitarian to maintain a trustful relationship for increasing patient participation in the registry and maintaining patients in a cohort. A minority of interviewees considered that the addition of federal and local legislations on top of the professional code of deontology represented an excessive administrative burden.

Most of the interviewees recognised that communication with external physicians, experts and politicians was difficult. One interviewee associated this communication with the word "preaching" in order to illustrate the effort required to convince others that the data are of good quality, representative, and provide real-life evidence, i.e. that people could trust the CRG results and apply them in their daily work. The issue of data sharing and networking was regularly mentioned but difficult to clarify with interviewees: On the one hand, they showed a willingness to harmonize definitions and standardise electronic entries to ensure the quality of the CRG. On the other hand, they appeared reluctant to communicate with information technology specialists, who were considered insufficiently capable to understand and subsequently translate medical information into standardized items. Furthermore, some respondents recognized that transparency could be perceived as another obstacle to data sharing, because physicians may prefer non-transparency.

Table 4: Healthcare professionals' attitude towards themselves and peers

Attitudes	Interviewee comments (A, M', M'', R indicate group affiliation)
Moral obligations inherent to political engagement	[A] [translation] *"They [mandatory hospital CRGs] are mandatory statistics, therefore it seems relatively obvious as moral obligations to maintain them."* [A] *"Our role is to propose to the parliament a law, that is useful, the most useful possible [for CRG]. That's I think our most noble and our most important duty."*
Necessity to better inform patients	[M'']: *"I think the patients are not well informed and I think maybe there are some fields, which could be destroyed if there would not be an objective information. You know, at the moment, there are a lot of news for example showing the data or pictures from persons are provided on the internet because they have been taken out of clouds or whatever. And I think this increases the fear, and I think it will be very important to inform patients on what data are stored, why they are stored and that they cannot be identified for example."*
Norms can be burdensome	[M']: *"We don't need new regulation because as a doctor, as a lawyer, you have your professional obligations to keep your clients or patients' data secret. So, if you don't do that, you can be brought to court nowadays, so I don't see what it changes if the patients must sign 5 such forms entering a hospital, on biobank, on whatever registry... it is counterproductive. You want to have an informed and empowered patient but it's completely the other effect, you induce with paperwork. Nobody can understand the legislation."*
Issue of transparency and communication	[M''] *"I am absolutely convinced that physicians do not want to have this level of transparency, because everyone in this country who is allowed by the patient to load, enter to his file, can see what the other physician did, and "untransparency" is a very important thing in the health care system."*

Finally sharing CRG data was not synonymous with linking registries to create bigger data sets. The interviewees close to patients insisted on the importance of meaningful information. They sought to provide bottom-up inputs to data centre managers and steering committees in order to help make the findings understandable and meaningful. For them, "big" was not clinically interpretable and useful for their practice.

ii. Attitude towards patients' role and agency (Table 5)

All interviewees recognized patient rights to know, to protect privacy and to own their data. However, their attitude regarding patient information indicated some discrepancies with this position. No clear answer was given to the question of the destiny of data following patient withdrawal. Also, the possible risk that patient information could be neglected in the absence of formal consent was accepted – for instance, when a data centre treated their data anonymously, patients were not supposed to be informed. Despite our research design including the prompt cards "patient information" and "trust", respondents didn't attach much importance to empathy with patients, patient information or patient agency; many interviewees thought that patients did not care about or could not understand CRGs. Exceptions to this attitude concerned one participant who belonged to a patient association in

the discriminative sampling, as well as most of the treating physicians who – in comparison to other HCSs – indicated greater concern for patient information, in the interests of building and maintaining a trusting relationship with their patients.

Table 5: Healthcare professionals' attitude towards patients

Perception of patients' capacity	Interviewee comments (A, M', M'', R indicate group affiliation)
Patients want to know	[A] [translation] *"Patient information is the most important. Patients need information in order to be able to consent or refuse. Information should be in a language they could understand."* [M''] *"We have asked the physicians and the patients what they thought about that, and they were saying: well I am not against but I want to be informed, I want to be informed preferably by my family physician, by my GP and I want to know what is going on, but I am not opponent to this type of research, but I would like to know."*
Patient information is not systematic	[M''] *"We have a formal agreement [from the federal commission for professional secrecy] that the data can be transmitted to us. They are anonymous, and the patients don't know."*
Not much value assigned to patient's capacity to understand	[M'] [translation] *"Well, for me it is important to inform patients …yes the patients, even if they usually don't care about it."* [A] [translation] [interviewer's question about the perception of patient's position] *"The patient? it is eight million of citizens, and each of them have their head, their morality, their feelings, their perception of the reality… There is no patient lambda …If I had to answer your question, I would say that a patient lambda in Switzerland has no idea about what you are asking- It is a level of mental abstraction that is present in less than 1% of the population."*
Patient information is a moral duty	[M'] *"We do not need [an informed consent] because we, basically we collect data which is collected anyway, so you could argue the patient doesn't really care, but he needs to know what it's done, you know."*
Patient information is useful to maintain trust	[M'] *"A well informed patient is convinced that he can really trust how his data is handled, about security of the data. He will be more willing to say yes; I agree that my data will be put into this database."*
Patients have the capacity to contribute actively	[M''] *"We also plan to have a, in a second line, a patient self-registry, so that the patients themselves can register themselves into the registry. So, there is two ways to go in. So, either for the doctor, physician, or then for the patient himself: I have this rare disease, I want to be part of this registry."*

All interviewees supported respect for patient autonomy, recognising that patients had no obligation to provide their data and participate in CRGs. A few respondents indicated that patients might feel a moral obligation of reciprocity to share their data when they have previously benefited from the healthcare services (e.g. transplant). Group R contested this idea of patient altruism, as 25% of clinical studies were stopped in Switzerland because not enough patients agreed to participate. No respondents were ready to accept patient membership in steering, nor they think that patients could act as members of a governance body. They never mentioned the possibility or need to empower patients' agency.

Some interviewees remarked that patient associations were weak and that patient participation in a steering committee would only be an "alibi", with no added value. A few respondents stated that patients were too "self-centred" to be able to participate. Only one interviewee spoke about the possibility of patients registering themselves in a CRG, in the special context of rare diseases.

iii. Attitude towards society (Table 6)

A few interviewees explained that patients disliked the label "patient" as they were hoping for recovery to "normal". They explained that patients would like to be part of the overall citizen community, i.e. the society. Respondents defined CRGs' societal value as the delivery of public benefits and the possibility of improving medical knowledge. They recognized that, depending on their purpose, all health stakeholders could benefit from CRGs. Physicians and hospitals would improve their work, researchers would identify new patterns, experts would make better informed recommendations, public health would justify their decisions and health regulations, and insurers might introduce premium rebates. As a result, patients in general would benefit from all of these improvements, i.e. patients' family and future patients. Some interviewees mentioned that patients themselves might secure direct benefits as participants of longitudinal cohorts could benefit from better medical follow-up, as they are regularly contacted. A few emphasized the value of these benefits compared to less specific data collection from diagnosis related groups.

For most of the respondents, CRG data sharing and the dissemination of this information increases the social value of CRGs. The belief in these public benefits justified public funding and governance. Group R was particularly supportive of moral obligations concerning transparency, openness and comparative effectiveness between HCSs. To this end, it was suggested that physicians need to be better trained in information technologies and public health sciences. Group A focused as a matter of priority on addressing two major risks: privacy infringement because of excessive transparency, and the wastage of data because of data cemeteries and low cost-utility ratio. Waste was more an issue for the political right, whereas the political left was ready to take financial risks relating to long-term viability.

Governance was an important issue, but subject to conflicting views. Most interviewees supported public governance to serve public interests. For them, CRG resource allocation should remain scientifically and academically driven and be free from conflicts of interest, as in the case for projects supported by the Swiss National Research Fund. A few interviewees were in favour of small, non-bureaucratic governance, independent from institutional, economic or political powers, i.e. public authorities would provide financial support, but would not be involved in CRG governance.

Table 6: Healthcare professionals' attitude towards society

Perception of society benefit & role	Interviewee comments (A, M', M'', R indicate group affiliation)
Patients are citizens	[A] "*The patient is all of us".*
Clinical registries benefit society	[M'] *"Primarily it's a tool for everybody who has a research question "***.**
Patients may benefit directly	[M'']: "*It is always known that patients in a registry, they are usually better followed than other patients. ...because we have to see them every half year [in the cohort]."*
Social value is related to meaningful use	[M']: *"You want to do that in a meaningful way; I mean we don't do it in a sense that the DRG system; all the patients get a DRG kind of diagnosis, you know. So, in the end of the year you can bring all these DRG diagnosis together. But they are worth not that much. Obviously, they are worth very much because you are paid according to the DRG so it's important, but in terms of what they really say, what the patient has, and as outcome, it's, it's, you can't use it."*
Value increases with data sharing	[R] *"Sharing data increases the value of the collected clinical registry. A good register communicates, publishes results and invites further research proposals on these data."*
Value needs better physicians' education	[R] *"Physicians should understand the value of what they do when they use epidemiological data. Most physicians feel the moral obligation to keep registries for good quality assurance, but they tend not to share them, not to be transparent. Therefore, comparison is not possible and quality could not be improved. We should have a better national medical education and training, including evidence based medicine, epidemiology and the practice of critical thinking and reflection. Continuous education as well for medical development."*
Value includes financial risk-taking	[A] [translation] *"There is always a risk of error in the long term. I have some colleagues who told us that investments have to be made only in research projects that we are sure in advance that they would provide results. They have a serious problem understanding the word research."*
Value is related to trust	[A] [translation] *"Here, the socialist party will say: we need a beautiful law that ensures financing, governance, and an interdisciplinary governance which controls everything…etc. and which costs three times more. What the right side says is: no, we provide a legal basis and let the people free, and if they make mistakes, there are enough means to address them …it is this vision that I called the principle of trust."*
Value and governance	[M'] *"The CRGs should have a medical and social value. The Federal Office of Public Health is not apt to do it. It could financially support CRGs but only professional societies could govern CRG."*
Conflicts in interest	[A] *"Transparency issue is a possible deceptive motivation for a registry. CRG may be advocated for patient interests, but in fact would be performed and used for publications and academic careers of the investigators first of all."*

The definition of "public" was restricted to institutions and public associations or academies. No interviewee considered representatives of civil society as potential members of governance organisations for CRGs. Nor did they support health data literacy programs to facilitate the

participation of citizens, even when the question was directly asked. One interviewee said that the necessary education should be done in school and not later, because it would not be feasible or effective with patients or adult citizens. The role of communities and society was mainly limited to funding issues, with cantonal and federal contributions, and sometimes, unusual health contributors such as the national lottery. Moreover, lobbying or private funding were seen as risking unfair allocation of healthcare resources.

For group R, governance was not the role of an ethical committee, but it required a common long-term political vision including the prioritization of CRG projects, and an ethics of responsibility for each physician and patient.

Respondents' suggested strategy

When they came across moral conflicts between norms guiding their behaviour and their attitudes, interviewees started to develop practical strategies to support decision-making. Some had already aligned their values and actions to guide their medical judgment, but their decisions were not always consensual.

Confronted with the need for meaningful CRGs, HCSs proposed to intervene at different levels:

- To increase patient participation in CRGs, group M'' believed in their capacity to influence policy-makers to promote opt-out forms of consent and new forms of consent, whereas group M' relied on better patient communication to develop more trustful relationships.
- To increase physicians' participation, a few suggested using financial strategies either as incentives (pull strategy) or as penalties (push strategy).
- To improve data quality, all respondents favoured the establishment of steering committees and transparency rules to improve trust between peers. Many interviewees also called for the development of interdisciplinary teams and systems to increase interoperability and simplify CRG process.

Other issues remained more controversial. When in doubt about the distinction between care and research, a minority of HCSs implemented a default-strategy of systematic declaration to the research ethical committee to protect their own interests. The definition of data ownership was also not consensual among the different groups. Physicians favoured the deontological approach of being stewards for patient data, whereas policy-makers preferred a split "puzzle" approach to data ownership avoiding power concentration. Patients were considered data owners, but only a minority of HCSs thought that patients ought to have some kind of compensation rights for the use of their data.

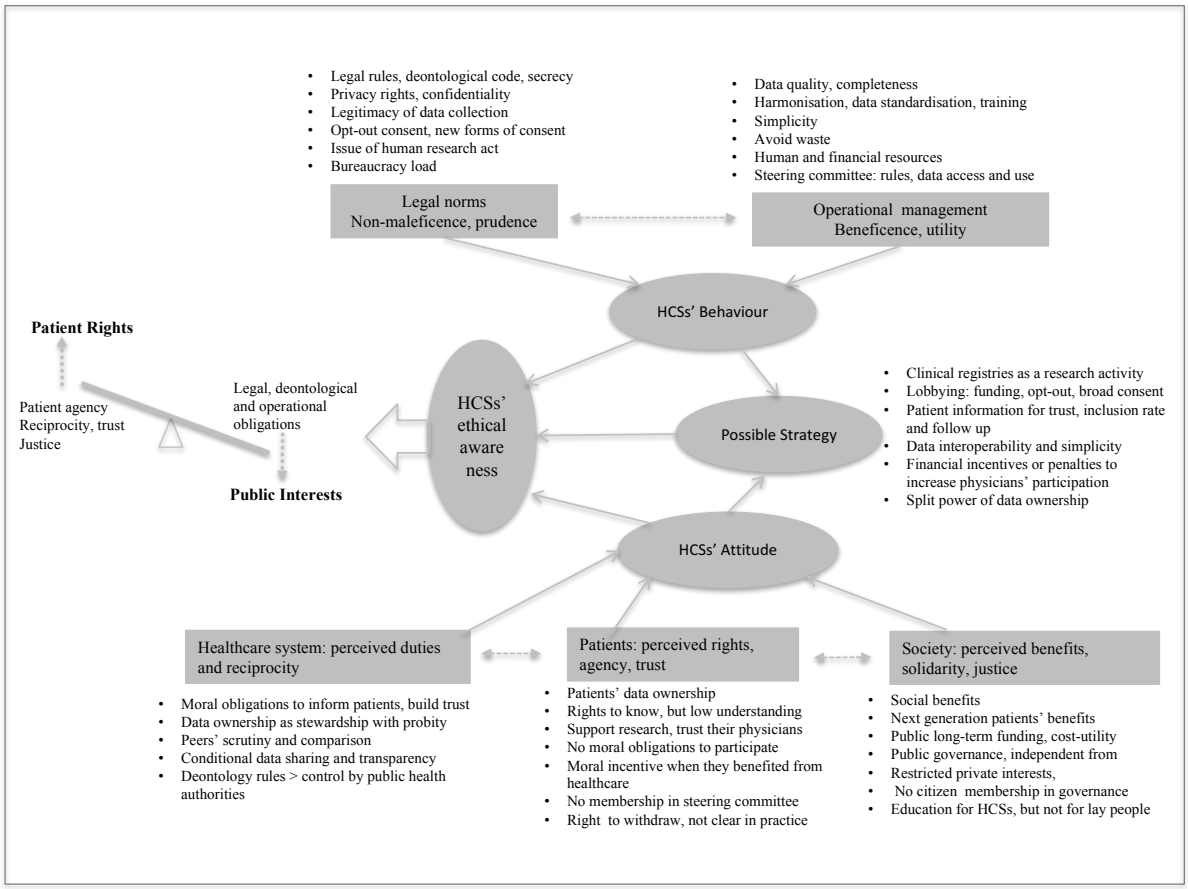
These strategic initiatives, although not formerly established, indicate how HCSs balance their behaviour and attitudes to adapt to their changing professional environment. They provided useful empirical observations to develop the final qualitative analysis proposed in the following discussion.

DISCUSSION

Data interpretation and final analysis

This qualitative research project explored the ethical awareness of HCSs involved in the collection and management of patient data in the context of clinical registries. The final analysis revealed that HCSs could be more aware of the potential emergence of an ethical tension between patient rights and public interests around patient data. This final analysis, resulting from the thematic analysis summarized in Figure 1, combined the following three interpretative steps.

Figure 1: Thematic organisation for in-depth understanding



i. HCSs concentrate on legal norms, deontological code, operational data management rules and good clinical practice, in order to ensure the legitimacy and utility of the collection and use of patient data necessary for the different types of CRGs. Their ethical justification relies on the principles of non-maleficence, prudence as well as social utility and benefits. In contrast, they give little consideration for patient rights to be adequately informed, i.e. to be informed even when consent is not required, to receive feedback, to have the right to ask questions and the right "not to

know". HCSs argue that patients have no moral obligations to participate in CRGs, but at the same time they try to stimulate participation by calling for opt-out procedures and new forms of consent. HCSs' ethical awareness seems to be more guided by their professional needs surrounding the collection and use of patient data than by an interest in the protection of patient's rights and autonomy. From a normative point of view, this utilitarian perspective may impede an adequate assessment of the risk of infringing patient rights for the sake of professional and public interests.

ii. Communication between HCSs is problematic and compromises peers' trustworthiness, because they do not support unconditional transparency and scrutiny of their work, and do not show much interest in bottom-up inputs. Communication with patients raises a similar issue. HCSs do not assign much value to the patients' capacity to understand and contribute to governance, and therefore do not foster reciprocal trust with patients. These limitations with transparency and trust increase the risk that peers are reduced to simple data collectors, and patients to simple data sources in the production of a CRG. These difficulties with recognizing patients as fully capable of shared decision-making indicates that HCSs' interests for patient data could overcome the consideration of patients as an end themselves. The potential utilitarian bias in favour of public interests noted above is therefore insufficiently balanced by a more Kantian deontological approach forbidding the treatment of individuals merely as the means to others' ends.

iii. HCSs have demonstrated little overall awareness of the role of citizens in the governance of CRG patient data and the need to develop citizens' education for such a role. HCSs don't foresee the involvement of civil society representatives in governance. They recognise the need for public funding, but not the possibility that society could contribute to assess the whole range of social benefits and risks, i.e. balancing privacy against public interests. From a normative perspective, the process of deliberation and decision-making thus remains unduly expert-centred, favouring research, economic and political objectives, with a risk of conflicts of interest, hidden agendas and injustice.

To sum up, a potential tension between public interests and patient rights is related to the HCSs' asymmetrical perception of the ethical issues around patient data. Patients are solicited to give up rights to their health-related data, but their participation appears restricted to their role as data donors, with little recognition of the possibility of meaningful participation in decision-making. This observed lack of reciprocity between HCSs and patients, as well as amongst peers and the rest of society, gives rise to different ethically problematic consequences: it carries the risk of weakening trust in the patient-physician relationship undermining solidarity and justice at the societal level, and unfairly

infringing upon patient rights. The transferability of these findings to other debates regarding the use of patient data in the healthcare system needs to be examined.

General discussion

The aim of this research was to gain an in-depth understanding of how those involved in the collection and use of patient data, healthcare professionals, regulators and policy makers, were aware of related ethical issues regarding patient's rights, social justice and trust in public institutions. Transferable research findings can be recapitulated as follows: First, a utilitarian inclination towards norms and guidelines aiming at facilitating the collection and use of patient data appears insufficiently balanced by an overly strict, duty-oriented deontological approach to patient rights; second, HCSs did not assign much importance to patient rights in terms of patient agency and their ability to share steering decisions; third, at the societal level, it follows a pre-eminence of experts' role in the governance of large patient data sets at the expense of consumers' representation. These findings are all ethically problematic in themselves. Furthermore, they are also likely to undermine the expected social benefits of data sharing. For these reasons, HCSs should be more aware of the identified tension and further ethical guidance is required to address it.

No other qualitative study to date has explored the subject in Switzerland. However, our findings are in line with the current evolution of the Swiss healthcare system. First, the Federal Act for National Oncology Registry, approved in March 2016, will ease the production of patient registries with an opt-out procedure. [15] Second, operational recommendations for health-related registries have been published in July 2016 to ensure data protection and data quality, appropriate information and management, and cost/utility of CRG data. [16] Finally, a broad informed consent for all secondary research usages of samples and related patient data has already been implemented in some public hospitals, and is on its way to be implemented nationally. [17] All these events were in discussion at the time of the interviews, and it is thus difficult to determine whether the events have influenced the interviewees or if the reverse is true. Nevertheless, there has not been a concomitant development of ethical considerations, promoting patient agency and consumer participation in the management of patient data. This absence fits with the study's final analysis of a possible tension between patient-consumer rights and public interests. This observation is reinforced by the organisation of the project for a Swiss Health Personalized Network. This national project relies on bioinformatics-based systems and sharing of data from health institutions, academic research, and primary care, but does not involve patients or donors in its governance. [18]

Previously published literature confirms that healthcare professionals and administrators give little attention to patients' ability to understand or contribute to governance. The qualitative studies referred to in the design stage of our study interview guide were conducted in the UK and North America. [19-

29] Similar to our findings, healthcare professionals and administrators in these studies were vigilant about data protection rules, data security, confidentiality, responsibilities for patient data, and they strived for simplicity in data processes, transparency, and consensual rules between peers. These studies also included focus groups or interviews with patients. Patients' opinions showed some divergence with other HCSs' perceptions. Patients accepted the sharing of their data, but wanted to be informed and to have the freedom to participate or withdraw. They did not want their data passed to third parties, insurance or pharmaceutical companies, without being specifically asked beforehand. Patients usually favoured trust and partnership with their treating physicians. In fact, it seems that citizens in general, as well as patients in specific, have the capacity to intervene and assess the just equilibrium of patient rights and public interest concerning the use of personal health data. In Australia, a country with a long history of clinical registries, community and consumer representatives already participate in the governance of clinical registries. [30] More recently in the USA, following the Obama initiative on precision medicine, community citizens have participated in the registry design of the "One million Americans" cohort project. [31] Indeed, Fair Information Practices principles (FIPPs) have been developed to set common standards for patient involvement in the governance of personal health and genomic data. [32]

Assuming the transferability of our findings to all health-related big data, the tension between legal, professional and operating norms on the one side, and respect for patient agency and citizen contribution on the other side, could be difficult to resolve in the absence of additional ethical guidance. There is a risk that those with the expertise or economic power to effect change might favour additional legal and operational norms, to authorize the use of patient data for research and public interests. Thus, purported social benefits could justify ever greater usage of patient data, at the expense of listening to patient voices. This could lead to an erosion of the necessary reciprocity, solidarity and trust in the healthcare system, leading to the following conflict: more data sharing, justified on the grounds of social benefit, could foster distrust towards healthcare professionals and the public healthcare system in general, thus reducing the expected social benefits. The risk of such a counterproductive result provides due grounds for addressing the tension between public interest and patient rights, as identified in the qualitative research.

The World Medical Association (WMA) has also raised concerns about the management of large patient data sets and biobanks, some relating to privacy, and others relating to patient autonomy and dignity, and to commercial issues. [33] WMA recommends that the collection and usage of patient data should require patients to be properly informed, with a clearly defined set of information about how their data will be used. Further, WMA recommends that when this is impracticable, there must be a governance process that protects patient rights across all future uses of their data. A broad consent

agreement should not be unconditional. These recommendations primarily concern physicians, and so may not be followed by other HCSs.

Nevertheless, these ethical reflections regarding large patient data sets could be broadened, to integrate patient and citizen concerns. The sphere of freedom and protection for patients could be delimited in the first instance beyond which the scope for research and public benefits from patient data could be fall under a multidisciplinary governance structure, including representatives from a range of different social communities. Such an integrative approach would introduce more reciprocity into HCSs' ethical frameworks, and would enrich top-down ethical considerations of legal and operational norms, implicated in the digital transformation of the healthcare system. This integrative approach can already be spotted in the literature. Ethical, legal and social implications (ELSI) are regularly examined for large data sets of patient data and precision medicine. ELSI focuses on topics of consent, disclosure, data sharing, privacy and confidentiality at a population level. [34] As a complement, in its 2015 report, the Nuffield Council on Bioethics recommended the usage of four essential principles - respect for the person, respect for established human rights, participation of those with morally relevant interests, and accounting for decisions – that support an integrative ethical approach to biological and health data. [35]

In the wider medical domain, ethical reflections have already been developed in similar situations, when a tension has arisen between clinical research for public interest, framed with a utilitarian approach, and individual care, based on a deontological frame and patient rights. Beyond the primary application of medical information, to achieve good patient care, it is advocated that patients' values and knowledge should also be considered, when their data is used. [36] In the case of governance of big biobanks, Brownsword has challenged the dichotomy of participants' rights vs. public interest with regard to informed consent, return of information, and the evaluation of public interest. For him, the establishment of the legitimacy of public interest and associated private projects, requires an evaluation of the principle of proportionality including consideration for the rights of participants and the community. He proposes an enhancing consent, providing a "mini-constitution" that simultaneously protects patients from disproportionate claims of public interest, whilst introducing greater flexibility for future research. Brownson proposes two layers of consent. Thus, participants would: i) provide informed consent for certain specified research uses of the data and samples given to the biobank, and ii) provide further consent for a special procedure and its outcome in connection to future public interest that was unanticipated at the time of consent. Patients' rights would further be protected with various options for withdrawal or opting out, within the mini-constitution. [37] This human rights based approach could be applied to all large patient data sets, to enhance present-day ethical approaches with greater patient involvement. Any flexible aspects of patient rights would be pre-determined before rules for data sharing are established.

It is acknowledged that patients are at the same time both private and public individuals, and thus scientific citizens have an increasing role in the management of human genetic and health databases in a democratic society. Citizens' participation would therefore require the development of public programs for health digital education, and public spaces for deliberation and citizen consultation. [38] The WMA and Nuffield Council on Bioethics have already recognised the roles of patients through their recommendations on patient autonomy, dignity, capacity to decide, and shared governance with all citizens concerned by health information. Their approach is compatible with an ethics based on patient narrative identity, as an alternative to the human rights theory. Grounded in his work on narrative identities, Ricœur's ethics exemplifies the possibility of overcoming the duality of utilitarianism vs. deontology for patient data management. [39] In his reflection on medical judgment, Ricœur advances the following rules: i) physicians should regard the patient as an individual, ii) each individual is indivisible and should not to be fragmented into biological, psychological and social parts, and iii) maintaining reciprocity and trust is necessary to ensure that patients don't become dependent on HCSs. Patients can thus be considered as citizens with a rich narrative identity, with patient data forming part of this identity. Ricœur identified a tension between health and the wish to live well that can parallel the tension between public interest and patients. [40] He recognised the threat of "objectifying" the human body following the mixing of the therapeutic project and the epistemic project of biomedical research, in other words the tension between considering the patient as a person, and the protection of public health. His approach to narrative identity at both the individual and collective level offers one way of reconciling, in practice, this tension around the ethical aim of a "good life, for and with others, in just institutions". [41]

These remarks are meant to open up a constructive normative perspective on the further development of an integrative ethical approach to the management of health-related data – an approach that addresses the tension between public interests and patient rights and agency that has emerged in this empirical study. While it is beyond the scope of this paper to enter into a detailed normative development, we think that the ethical approaches presented above, that emphasize the need to involve patients and citizens, provide us with a good starting-point for further ethical reflections.

Limitations and future steps

The final analysis of this study must be considered with caution, as empirical findings are not directly translatable into normative ethics. During the interviews, we could not avoid a gender effect, which reflects the actual Swiss situation of fewer women than men in leadership positions. Interviewees were also predominantly physicians, as often observed in the healthcare domain. Patients were not interviewed, with the exception of a patient organisation representative from the discriminative sample. Therefore, the investigation was limited to the perspective of healthcare professionals,

regulators and policy makers about patients' views. As a next step, it would be paramount to investigate the patient perspective directly, as well as the evolution of the patient-physician relationship when confronted by the arrival of a third, a "digital information" partner. It is not always easy to study patients and patient organisations when it comes to subjects such as patient data sets or precision medicine, as they can be too focused on specific pathologies. Some authors also mentioned that patients might be under the influence of for-profit industrial lobbies. [42] Our findings, showing consequences for the whole of society, argue for broad representation from the community in future survey or mixed-method empirical investigation.

This study adds, however, relevant knowledge to the ethical evaluation of practices around large patient data sets, and represents useful material from which to develop further normative reflection towards a more integrative ethics, in order to involve patients and citizens in the governance of health-related big data.

CONCLUSION

The increased role of large patient data sets in clinical research, medical care, and public health, is changing the behaviour and attitude of most HCSs towards patients and patient data management. This empirically-based research explores ethical awareness around the production and use of patient data in the context of Swiss clinical registries. Although HCSs were aware of the need for legal and operational norms to guarantee non-maleficence, prudence and beneficence in the use of patient data, they tended to show less interest in the moral risk of infringing upon patients' rights, in particular those related to agency and capacity to share in the governance of their health-related data. The final analysis identified a potential tension between patient rights and public interest, which risks undermining the expected benefits of large patient data sets. This tension could be addressed with a more integrative ethical approach that empowers patient agency and consumer advocacy in governance bodies, and gives priority to a core of patient rights before easing the rules to facilitate the usage of patient data for research, precision medicine and public health. In short, interests in patient data should not stand in for the patient's voice.

LIST OF ABBREVIATIONS

CRG: Clinical registry

DRG: Disease-related groups

ELSI: Ethical, legal and social implications

FMH: Swiss medical Association

GP: General physician

HIV: Human immunodeficiency virus

HRA: Human Research Act

HCS: Healthcare stakeholder

NIH: National Institute of Medicine

UK: The United Kingdom

USA: The United States of America

DECLARATIONS

Ethics approval and consent to participate

The local ethics committee (Ethikkommission Zürich) judged the project as a health service research with no ethical risk (KEK-StV-Nr. 42/14). Informed consent was obtained by all interview participants.

Consent for publication

Not applicable.

Availability of data and material

The data sets analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

CMD framed the research design, conducted and transcribed the interviews, analysed and interpreted the findings, and drafted the manuscript. NBA framed the research design and contributed to the manuscript. HB contributed to the interpretation of the findings and to the manuscript.

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Additional file 1. Definition of clinical registries for the purpose of the qualitative study

Definition of clinical registries after the Agency for Healthcare Research and Quality*

A clinical registry is an organized system that:

1. produces healthcare data using observational study methods to collect uniform data (clinical and other), outcome-focused, from a population of patients defined by a particular disease, condition or exposure,
2. used for one or more predetermined purposes i) clinical care (measurement and improvement of the quality of healthcare services and process, monitoring of safety and harm, comparison overtime), ii) scientific research (knowledge/natural history of the disease, effectiveness of a drug, device or intervention in real-life, off-label uses of therapeutic products, recording of safety and unexpected event), or iii) policy (cost-effectiveness evaluation, health technology assessment, comparison between institutions or physicians) ,

What makes the specificity of a clinical registry is its purpose according to how their populations are defined, for instance:

- *Product registry: assess patients (all or samples of-) exposed to therapeutic products (drugs or devices)*
- *Health services registry: assess clinical quality and outcomes in patient groups having a common procedure*
- *Disease or event registries: assess populations with the same diagnosis*

* Glicklich RE, Dreyer NA, eds. Registries for Evaluating Patient Outcomes: A User's Guide. 2nd ed. (Prepared by Outcome DEcIDE Center [Outcome Sciences, Inc. d/b/a Outcome] under Contract No. HHSA29020050035I TO3.) AHRQ Publication No. 10-EHC049. Rockville, MD: Agency for Healthcare Research and Quality. September 2010.

Definition and taxonomy of clinical registries

Type of clinical registry CRG			**Population definition**		
			Product registry (patients exposed to therapeutic products: drugs or devices)	**Health services registry** (patients with a common procedure: looking at clinical quality assessment and outcomes)	**Disease or event registries** (population with the same diagnosis)
Predetermined purpose	**Clinical care**	Quality measurement & improvement			
		Monitoring safety and harm			
		Comparison overtime			
	Scientific research	Disease knowledge & natural history			
		Effectiveness of a drug, device, or intervention in real life			
		Off-label uses of therapeutic products			
		Recording safety and unexpected events			
	Policy	Cost-effectiveness evaluation			
		Health technology assessment			
		Comparison between institutions or physicians			

Additional file 2. Literature research strategy for the qualitative research

May 2014

A. Clinical registries	AND	B. Ethical Issues	AND	C. Qualitative Research
OR *Clinical, patient, disease-registries* *Medical records* *Electronic health records* *Medical record linkage*		*OR* *Informed consent, anonymity, confidentiality, privacy, data sharing, ownership, conflict of interest, bioethical issues, clinical ethics, ethical review, ethics research, principle-based ethics, Ethics, morality.*		*OR* *Interview* *Focus group* *Grounded Theory* *Mixed methods* *Phenomenological analysis* *Thematic analysis* *Narrative analysis* *Discourse analysis*
Pubmed 38				
Web of science 31				
After duplicates removed 39				
After abstract reading 13				
After full-text assessment for eligibility 11				
[Reference number in the manuscript]. Paper's first author. Journal's name, year of publication, volume, pages.				
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Additional file 3: Topic guide example for the group "M" making the clinical registries

Place: ***Date:*** ***Code:***

A. **EXPERIENCE WITH CLINICAL REGISTRY (IES): Sub-group M**

- How would you describe your role for the registry?
- Can you explain what is the main purpose of your CRG?
- When did you last have to solve a problem regarding the registry?
- Can you tell me more about that?
- Is it a typical issue you have to face?
    a. If yes: frequency? Burden? Possible consequences? Suggested solution?
    b. If no: what would be a usual /typical issue? Could you explain it further? Possible burden? Consequences? Suggested solution?
- How close to your idea, are the other people involved in your CRG? If not closed, can you explain to me why?
- Can you tell me more about the management / governance of the CRG?
- Who do you think benefit the most from this CRG? Why?

B. EXPLORING GENERAL ISSUES

- Some physicians and public health responsible persons say that it is difficult to start or run a clinical registry. Can you tell me why they may think that?
- Do you share their point of view? Why?
- I have picked up some of the issues they reported about CRG on these cards: …**see cards**. Can you look at them, and think aloud…
    - What do you think about these different themes?
    - What do they mean for you? Why?
    - Are they all relevant?
    - Could you put them in a sort of order? Or in relation to each other??
    - Could you give me an example of a main issue?
    - Could you please tell me more about …
    - Could you explain why the issue on the last card is not so important for CRG?
- How will you define "relevant"… (In relation to what or to who?)
- Is there one or more issues not addressed by these cards?
- If yes, can you write them on these white cards? …
- How would you arrange the cards now? (*Emerging ethical framework*)
- What do you think patients would think?
- How do you feel now with these themes for CRG?

C. POSSIBILITY OF EDITING RECOMMENDATIONS (if short with time: bold only)

- How easy or difficult would be to address the main issues you mentioned?
- What would be the best way to do?
- **Would you recommend developing guidelines on what you advise to do?**
- How easy do you think would it be to implement such a set of recommendations?
- Can you explain me why?
- What will you advise to do about that?
- Would you recommend national ethical guidelines? Why?
- If yes, **how do you see the best governance for the implementation and revision of such ethical guidelines?**

D. DEFINITION TABLE *(beginning or end of the interview with demographic questions)*

Looking at the general definition of CRG given in the information sheet, I have made a table. Could we please tick all the boxes relevant to your registry. → table

E. CONCLUSION

- Thank you very much for your collaboration, I hope you enjoyed this interview,
- Looking back at it, is there anything you would like to add…
- Possibility to re-contact him/her by mail or telephone if something appears unclear at the analysis.

8. Conclusion

The methodology used was a thematic analysis based on individual semi-structured interviews. This approach, derived from Grounded Theory, provides the opportunity to reflect on the empirical data at the same time as it is collected and analysed.[79] The interview questions can be modified during the study, based on the output of an ongoing reflective analysis. This process helps generate good material for further normative reflection. Interpretation is an important feature in qualitative research. Total impartiality is hardly attainable, but cross-validation of study design, data coding and categorizing help limit bias and misinterpretation. Fellow members of the Institute of Biomedical Ethics had the generosity to perform parallel coding of several extracts of the study.

The study uses the context of clinical registries to explore the experience and ethical awareness of physicians, regulators and policy-makers towards the collection and use of patient data gathered in large datasets. Patients were not interviewed, and their perspective on patient data is drawn from the respondents' perception. There is, nevertheless, coherence between our results and findings in the literature. Health professionals privilege legal and operational aspects to achieve useful patient datasets. They respect patients' rights as required by the law, but do not consider patients and lay people capable of understanding health-related data. Consequently, they do not acknowledge the opportunity to empower patients' agency or promote governance memberships. Conversely, patients are willing to contribute to research as long as their data is not communicated to private sector firms. They therefore demand more information, feedback and active participation.

This observed asymmetry would result in a tension between the utilitarian reasons underlying public interest, and the patient rights concerning the use and dissemination of their data. International and national expert groups have already investigated this ethical issue. Our article draws on the positions of the World Medical association and The Nuffield Council on Bioethics, which recommend a wide approach to patient rights including the concepts of autonomy, dignity, capacity to decide and shared governance. These associations recognize the social benefits attached to health-related data. This was also identified in our study.

Trust is an issue in the asymmetry of perspective between patients and other healthcare stakeholders. A trustful partnership was advocated by patients and treating physicians.

[79] Ritchie, J., Ormston, R. 2014. The applications of qualitative methods to social research. In *Qualitative Research Practice. A Guide for Social Science Students and Researchers,* 2nd ed. Ritchie, J., Lewis, J., McNaughton Nicholls, C., Ormston, R. eds. London: Sage Publications Ltd, ch 2.

However, this link weakens as the distance between the patient as a data-donor and the health professional as a data-user, grows. This observation indicates that consideration of patient rights could vary depending on the proximity of healthcare professionals and their different goals. The issue of trust was also present between health professionals, leading to the question of truth in data, and the desire to strengthen the legal frame. Reasons for public interest to collect and use patient data, might thus be distorted by the utilitarian views of some groups of health professionals. Similar inconsistency over public interest was also observed between on the one hand the promotion of public interest for patient data at the expense of a minimum legal consideration for patient rights, and on the other hand the fear that patient data would be collected but not used i.e. wasting medical resources, time and bothering patients for nothing.

Potential conflicts of interest and overriding of patient rights in the absence of benefit indicate some incoherence with the model of balancing between public interest and patient rights, and the necessity to develop more appropriate governance for patient data. The following issue is to evaluate the contribution of these empirical findings to normative reflection. To this end, I have pragmatically and intuitively proposed two reflective paths under *a priori* opposed perspectives: a judicial one based on human rights, and an ethical one based on the concept of narrative identities. The first approach reproduces the constitutional framework of human rights and the conditions permitting their restriction at the level of patient data. The governance includes agreement, as in a contract, between patients and professionals on the level of flexibility and options for participation. The second approach to governance refutes the opposition between the patient as a capable person and the promotion of public health interests. Defining narrative identity at both individual and collective levels would reconcile patient rights and public interest around a common ethical aim.

In the next part of my dissertation, I shall develop a normative reflection based on the narrative perspective.

PART IV. NORMATIVE APPROACH

The issue of the ethical governance of the production and use of patient data has been raised in the context of the former empirical findings covering reasons behind public interest, the translation of public interest into practice, and potential improvements in patient rights. The situation is complex. Professional stakeholders are multiple, coming from medical, biotechnological, informatics, economics or public policy. Patients are also diverse, presenting with acute or chronic diseases, or even refusing to be labeled as a patient. Faced with this plurality of stakeholders and differing contexts, it is not possible to identify a unique ethical issue to be resolved with patient data. As in an orchestra, governance would need to consider all players and to adapt to changes in the processing and usage of patient data.

This metaphor evokes a narrative approach to patient data. My medical practice was based on a narrative process that successively involved listening to patients, establishing anamnesis and symptoms, performing clinical examination, integrating laboratory results, considering diagnostics, finally establishing the therapeutic possibilities with the patient, and following up where appropriate. Each patient was unique and illustrated a different story. Even when I was responsible for large hospital wards, I nevertheless still managed to understand each patient and his/her data individually. This experience led me to envision individual patient data as a short story, data from several patients as a novel, and large patient data sets as a library. This also means that each patient is, at the same time, a character, a «voice» in his/her story, as well as in the collective story of a community, and for future patient stories.

Preliminary remark

The notions of narrative ethics, narrative identity, agency and narrative medicine are widely used in the literature, but can cover different definitions or concepts. It is thus necessary to clarify how Ricœur uses these terminologies. Narrative ethics is usually one of several approaches to moral deliberation in clinical ethics. However, Ricœur does not limit narration to the reconfiguration of an issue based on psycho-sociological, anthropological, or cultural resources. His work has to be understood as philosophical ethics based on a narrative approach, and not as another contribution to applied narrative ethics. For him, narration is a necessary step towards knowing and understanding oneself and others, and their corresponding actions. The characters in action develop their narrative identity, both individual and collective, with the two poles of sameness and selfhood. Selfhood confers to each character, his/her dimension of agent “capable, acting and suffering”, and accountable for his/her actions and life. Moreover, Ricœur uses the concept of agency at a philosophical

level, and not in terms of special behaviours, relationships or values as usually acknowledged or challenged in biomedical ethics.[80] Ricoeurian agency is linked to an "identity being capable", a perspective closer to the concept of human dignity than to a measurable capacity to decide or act.

In addition, narrative medicine is central to both narrative ethics and narrative identity, as it focuses on the relationships between a patient and his/her physician,.[81] In Ricœur's work, narrative medicine permits the emergence of the patient's voice and subsequently his/her contribution to collective and historical narrations. At the level of applied ethics (named also posterior or prudential by Ricœur), narrative medicine is essential to the development of reciprocity and trust in the relationship between patient and physician.

9. Rethinking the ethical approach to health information management through narration: pertinence of Ricœur's 'little ethics'

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[80] Lopez Barreda, R. 2016. Towards a broader understanding of agency in biomedical ethics. *Medicine, Health Care and Philosophy*, 19:475-483.
[81] Charon, R. 2001. Narrative Medicine. A model for empathy, reflection, profession, and trust. *The Journal of the American Medical Association*, 286(15):1897-1902.
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SCIENTIFIC CONTRIBUTION

Rethinking the ethical approach to health information management through narration: pertinence of Ricœur's 'little ethics'

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Abstract The increased complexity of health information management sows the seeds of inequalities between health care stakeholders involved in the production and use of health information. Patients may thus be more vulnerable to use of their data without their consent and breaches in confidentiality. Health care providers can also be the victims of a health information system that they do not fully master. Yet, despite its possible drawbacks, the management of health information is indispensable for advancing science, medical care and public health. Therefore, the central question addressed by this paper is *how to manage health information ethically*? This article argues that Paul Ricœur's "little ethics", based on his work on hermeneutics and narrative identity, provides a suitable ethical framework to this end. This ethical theory has the merit of helping to harmonise self-esteem and solicitude amongst patients and healthcare providers, and at the same time provides an ethics of justice in public health. A matrix, derived from Ricœur's ethics, has been developed as a solution to overcoming possible conflicts between privacy interests and the common good in the management of health information.

Keywords Health information management · Hermeneutics · Justice · Narrative identity · Self-esteem · Solicitude

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Introduction

Health information management (HIM) is defined as "management of the acquisition, organisation, retrieval, and dissemination of health information" (Medline 2013). Advances in information technology have opened up new possibilities for healthcare information to contribute to clinical care and public health, including links to biomarkers and genetic databases. Parallel to this progress, patients and clinicians hope for health benefits without risk to privacy or intrusive scrutiny. In the healthcare system, information management most often concerns large patient databases. The main ethical challenges pertain to patient informed consent, confidentiality, trust and trustworthiness (Juengst 2014). The development of genomics has widened the knowledge gap between the different stakeholders and increased the complexity of ethical issues regarding the consent process, data sharing, and return of results to donors (Tabor et al. 2011). Challenging conflicts in moral norms have emerged: beneficence versus harm when providing information, respect for persons' autonomy versus their questionable capacity to assimilate information, and a lack of fairness in the access to support or education for interpretation of genomics information (Appelbaum et al. 2014).

Moreover, technological progress in health information tends to focus attention on the information production tools and the increasing possibilities for data-driven decision-making for health purposes. New healthcare stakeholders from the information technology sciences have entered the medical field with their own health indicators. This issue is recognised by the World Medical Association as an important challenge for medical ethics (WMA 2013). Citizens are also increasingly solicited to contribute directly to health information, to be involved in the

decision-making process with their physicians and to benefit from personalised medicine. This last possibility is already widely used to leverage the efficacy of transplantations (Dion-Labrie et al. 2010). In the future, health information systems might ultimately deliver moral recommendations to healthcare stakeholders. Furthermore, the way information is generated and used has an impact on how medical knowledge is shared (Béranger and Ravix 2014). Thus, it is essential that all participants in HIM be involved in the ethical deliberation.

Yet, when patients or healthcare professionals are exposed to multiple HIM situations, they may be subject to conflicting moral recommendations. It is still unclear how to address ethical issues, given the broad spectrum of data covered by health information management. The standard biomedical ethical frameworks are usually targeted to a limited domain: clinical care, research or public health. The management of health information thus requires an accommodating normative ethical basis. It is possible to combine several moral theories in order to cover the entirety of the HIM field, analogous to the model of reflective equilibrium defended by Rawls (1971) and Daniels (1979). But this approach has been criticised, first, on the grounds that it is difficult to access and put into practice (Beauchamp 2004) and, second, because in this model each framework risks losing its distinctiveness and its specific moral justification (Arras 2007, p. 67). Moreover, combining parts of different ethical frameworks to fit the entire scope of health information compromises the coherence of the underlying ethical theory. Therefore, there is need for a more comprehensive overarching model for ethical management of health information.

The aim of this research is to answer the question of *how to manage health information ethically*? In light of the expanding fields covered by HIM, a narrative approach offers an answer to the *how* by providing a complete picture, depicting all characters and their interactions over time. Narration is currently being revisited in its ethical intention, combining principlism, casuistry and virtue ethics, and positioning itself as a hermeneutic enterprise (Brody and Clarck 2014). Ricœur's work on interpretation is closely related to the narrative aspects of texts, actions and history (1991). Indeed, for the French philosopher, narration is crucial for the mediation between action and moral theory. Based on one's own narrative identity, everyone is capable of action aimed at the "good" and "obligatory" (Ricœur 1992). Thus, his ethical theory surpasses the binary model of moral rules guided by normative theories, which has been considered too restrictive (Takala 2015).

This paper starts by identifying the narrative dimension of health information management. Narration establishes a bridge between HIM description and interpretation, which in turn leads to Ricœur's view on narrative identity and ethics. Ricœur's "little ethics" is then portrayed and applied in a simplified ethical matrix for HIM. It argues that Ricœur's fundamental aim of "the good life with and for others in just institutions" provides the appropriate ethical basis for managing health information. The article does not aim to re-interpret Ricœur's philosophical ethics. Its purpose is to show the relevance of the proposed matrix for the ethical governance of HIM, and to illustrate this with examples in HIM. Finally, possible objections to this Ricœur-inspired approach are briefly addressed.

A narrative approach to health information management

The production and use of health information should not be reduced to a disembodied collection of data as it engages in a narrative dynamic involving several healthcare stakeholders. Healthcare stakeholders (HCS) refer here to all HIM players, namely patients, donors of biological samples, physicians and other healthcare professionals, but also to information experts, health payers and regulators when they are involved in the management of health information. This section outlines the value of placing the health information elements into a narrative mattering map, taking into account the role of stories.

The mattering map approach to narration

Montello describes the mattering map as a *how* approach to moral thinking, which helps focus discernment on what matters (2014). In analogy to Montello's model, the HIM *mattering map* has *voices* that tell the story embedded in HIM, stakeholders as *characters*, the healthcare domain as the *context*, and the purpose and regulations as the *plot*. The subsequent resolution of the HIM story identifies the elements that really matter for patients, their relatives, and observers. Patients (or donors of biological samples) are the voices who tell the story. Other stakeholders can contribute to the tale, but they are not the main narrators. For instance, the physician's voice can be the one that informs patients and collects data. He also shares patients' data with other users, and may analyse and interpret the results. Regarding HIM, narration is never about a single voice, and characters reveal their sense of social and self-agency through narrative (Anderson 1997). As in an orchestra, actions and characters are related by correlation and not by causality. Indeed, Montello uses the metaphor of music to explain that the resolution of the plot corresponds to the recovery of "consonance", as opposed to "dissonance" (2014, p. S5).

The patient's voice has long been valued in narrative medicine. As it is not just a matter of subjectivity,

objectivity or accuracy, narration reveals something important and authentic about the patient and supports the development of patient's agency and physician's understanding (Shapiro 2011). Frank explains the importance of patients' narrative identity and empowerment for medical decolonisation, i.e. physicians no longer monopolising patients' stories for their own benefit (1997, pp. 11–14). The value of the narrative is not so much about establishing the absolute truth, but more about emphasising the value of the trust that should govern the patient-physician relationship. This also applies to the relationships between all participants in health information management.

Examples of mattering maps in HIM

The mattering map helps identify different forms of narration in the field of HIM and reveals ethical dilemmas as *dissonances*, as illustrated in the following examples.

Firstly, some well-known issues compromising the benefit of HIM continue to persist. They notably include the problem of missing voices of patients eligible, but not included in cohorts. Missing voices originate from characters that are more than the mere numerical proportion of non-participants. Larger data set sizes may reduce the influence of misreported data, but cannot make up for what is not included and recorded. Missing voices could regroup those who are not compliant to treatment and could, for instance in tuberculosis or HIV infections, be those who represent a threat of contaminating other citizens or promoting drug resistance. Their identification in the HIM mattering map is not only important to ensure valid data, but also to detect *dissonances* as a failure of the trust agreement between these patients and their physicians, or a lack of transparency and trustworthiness between HIM characters, or a deception in the construction of the common good because of biased scientific publications.

Secondly, the mattering map can reveal dissonant HIM due to the secondary use of data, i.e. when patient/donor information is provided to third parties in the absence of patient/donor consent, or even without physicians' knowledge. Potential breaches in confidentiality and mistrust in the management of health information require better guidelines governing access to health databases. This is especially pertinent with biobanks. Initially based on human material archived for clinical or research purposes, biobanks have evolved towards large-scale genetic research, including the joint analysis of phenotypic and clinical data from patient cohorts (Wain et al. 2015). Voices and characters are better identified with the addition of data on phenotypes and medical contexts. This combination supports innovative research and more personalised diagnosis and treatment for patients. Thus, new HIM mattering maps are emerging in genomics. For instance, the return of incidental findings to donors follows various plots, depending on the findings and the type of informed consent. Considering the family members of the donor, Lenk and Frommeld have analysed different models, in which, through the description of actors, roles and contexts, the narrative components are revealed (2015).

Thirdly, in the context of personalised medicine, the HIM mattering map has to consider the emergence of predictive components of increasing precision, which contribute to more specific diagnostic tests, refined disease classification and individualised treatments (Jameson and Longo 2015). As a result, HIM faces an ethical dilemma between an abstract promise of truth carried in the emergent information, and a concrete decision to be reached on the communication and use of this information. The patient's voice might fade behind the intrusion of these new medical scientific findings or, quite the reverse, enforce the patient's participation in the medical decision. Each individual could be the heroine/hero in her/his own health story. This is already noticeable in medical screening, with the publication of amazing survival stories following early cancer detection. There are also negative stories of overdiagnosis that challenge the validity of screening advantages (Moynihan et al. 2014). These conflicting stories around the issue of screening exemplify another risk of narrative dissonance in HIM, e.g. the accuracy of the decision when there is insufficient evidence of the predictive value of new biomarkers.

Fourthly, dataset linkages, multiple uses of data in large medical databases, as well as the increasing availability of individual health data from the internet or mobile devices, have contributed to the development of big data in health. Big data represents the process that uses and reuses health and research data with the help of sophisticated digital processing and algorithms; the objective is to identify new health patterns based on data mining methods, which open new perspectives for future medical research and are thus different from traditional hypothesis testing methods (Nuffield Council 2015, pp. 15–16). The mattering map recognises these patterns as new types of plots in HIM, disconnected from inceptive single voices and challenging the roles and responsibilities of traditional characters. Indeed, data mining can be performed by information experts without the intervention of physicians or the need for close relationships with patients/donors. The application of big data algorithms is dramatically increasing complexity in HIM narration. On the one hand, big data supports the detection of unexpected or rare patterns that hypothesis-testing research ignores. On the other hand, the correlation of findings with disease or prognosis may be unclear. This evolving but still uncertain medical context requires revisiting ethical views on individual consent, privacy, public health interests, information property,

altruism and commercial development (Vayena et al. 2012).

Finally, advances in data size and analytic methods in HIM could be seen as a resurgence of scientific positivism, adding new narrative paths in the research for truth, and challenging the moral references for medical and bioethical judgement. Depending on the queries, numerous different plots could be revealed, which not only enhance scientific research, but also carry new patterns in moral thinking for HIM itself.

These HIM examples are not stand-alone and can be combined into a wider mattering map. The plurality of sources and connections constantly enlarges the HIM domain. Nevertheless, big is not always better for the management of health information (Toh and Platt 2013). Therefore, a narrative approach would mitigate the eagerness of data-driven medical judgement, and stimulate reflection in order to better *interpret*, i.e. discern and understand the type of precision, truth, and voices that matter in the management of heath information.

The passage by interpretation and the link with Ricœur's philosophy

The narrative approach opens up different perspectives of interpretation permitting an understanding of the patient, the message embedded in the health information and the behaviour of those using the information. *The model of text interpretation can be applied to HIM* following the quantitative (data processing) and qualitative (information management) aspects. This duality mimics the distinction between the locutionary part (the sentences) and the illocutionary part (how sentences are expressed) of a text, both of which meanings need to be analysed (Ricœur 1973). The theory of text and the theory of action have been developed separately in philosophy, and both theories can lead to a dichotomy between an explanation of structure and an understanding of motivation. Ricœur refutes this dichotomy because there is a continuous interference of human action in the course of events and vice versa, and this holds for text and action as well (1991). As a result, everything that can be understood from human action and history can be interpreted as a text.

This hermeneutical approach to action as a text is relevant for both historical and fictional narrative. At the intersection of these two key classes of narrative there stands human identity, which has to be understood as a *narrative identity*. Ricœur calls narrative identity the assignment of a specific identity to an individual (or a community) who is the subject of an action and who tells the story (1988). He differentiates two poles in the narrative identity: sameness and selfhood (1992, pp. 115–125). *Sameness* is about the question "what I am", the usual identity conception of being the same person, different compared to others and permanent throughout life and its course of events. Sameness concerns natural traits, physical, biological, and genetic characteristics. *Selfhood* is about "who I am", the very specific self, who is reflecting, non-permanent, adaptable, and capable of determining its own life. Selfhood implies an intimate relationship to otherness, and comprises the idea of faithfulness to the self "en devenir" (i.e. in the process of developing). Selfhood has an ethical dimension that evokes the agency freedom advocated by Sen (1985). Furthermore, the so-defined narrative identity can be applied to the individual as well as to the community, and these identities can be combined to build a common story.

The management of health information finds an echo in Ricœur's account of narrative identity. The construction of the plot brings to life the actions of the characters. Ricœur considers that this transposition from actions to characters establishes the characters' narrative identities in their two dimensions of sameness and selfhood (1992, pp. 140–143). Indeed, when patients/donors provide data, they share their narrative identity as sameness, adding their voice to the other same. Their narrative identity as selfhood makes them capable of deciding whether or not to participate, to give up rights to some personal sameness, to interact with the other stakeholders and institutions in a responsible way, to receive feedback information and to adapt accordingly. Each patient is also part of a community and contributes to the common narrative identity. Interpretation of the narrative HIM supports both the self-comprehension of a given participant and the comprehension of others in the medical and social community. Consequently, private and community goods are intimately interconnected, and it is possible to overcome the classical ethical dilemma between privacy rights and common good.

Furthermore, the interpretation of narrative HIM falls within the dimension of temporality (Ricœur 1984, pp. 52–87). The plot includes a succession of events with the possibility of unexpected events or patterns, depicting the *narrative time*. The concept of narrative time is particularly important with new types of HIM since biomarkers or population patterns can be delivered at a time when their value and possible medical use are not yet understood. As it combines individual and community aspects, as well as temporality, Ricœur's concept of narrative identity supports a more comprehensive model for interpreting HIM narration, compared to the relatively narrow model of narrative medicine for specified clinical settings as developed by Charon (2001). This enriched model helps progress from interpretation to comprehension of HIM and establishes a first ethical perspective.

Ricœur further defends the passage from narrative identity to ethics. He identifies different roles for

characters, with the possibility to be both subject and actor in a story. Thus, the patient is a human being acting and suffering, and this attests the correlation between narrative and ethics (1992, pp. 145–164). In the narrative HIM, actions are evaluated: patients and healthcare providers are actors, who can be approved or admonished, and their individual narrative identity is exposed to the regard of others. The narrative identity transforms a passive character into an active one, capable of deciding and acting accordingly. Specifically, it confers self-determination and accountability to the role. Therefore the narrative theory serves as mediation between the theory of action and the theory of ethics. Moreover, Ricœur's ethical theory develops the promise of sharing between the two narrative identities, personal and collective. Such a promise of sharing is essential for the ethical governance of HIM. This paper will thus further explore the ethical vision proposed by Ricœur.

Overview of Ricœur's "little ethics"

Ricœur first proposed his "little ethics" in the book "Oneself as Another" (1992). He then completed his ethical work in further lectures and in two books on "The Just" (2000, 2007). He differentiated between the terms *ethics* and *morality*. Ethics is about what is considered to be good (teleological, Aristotelian perspective), and morality is about what imposes itself as obligatory (deontological, Kantian perspective). He proposes a new architecture for ethics which explores "the capacities and incapacities that make a human being a capable, acting and suffering, being" (2007, p. 2). The concept of agency conveys this capability to act and to be accountable for one's own actions. Agency expresses itself through the narrative individual and collective identities (2000, p. 3). Thus, ethics is not about the identity of things, data or a disembodied healthcare information system, but about *moral agents* (in our topic, healthcare stakeholders). This analysis supports the idea that the right metaphor for the healthcare information system is not a business or warehouse model, but rather a human organisation. Indeed, Ricœur's work is about participative and communicative human organisation, with the concept of "*The Just*" influencing all human actions.

Ricœur's ethical philosophy rests upon the following three propositions: "(1) the primacy of ethics over morality, (2) the necessity for the ethical aim to pass through the sieve of the norm, and (3) the legitimacy of recourse by the norm to the aim whenever the norm leads to impasses in practice" (1992, p. 170). This article describes the three steps consecutively.

The primacy of ethics over morality

Ricœur names "anterior ethics" the ethical aim of the "good life, with and for others, in just institutions". Within this anterior ethics, he distinguishes three ethical values that are linked, but do not overlap: self-worth, reciprocal trust, and participative justice.

Self-worth

The teleological philosophy of *the good life* (sense of life in its entirety, not only biologic or fragmented) includes the notion of good virtuous actions, such as standards of excellence for physicians, as well as the good life towards which all these actions are directed. When they interpret their actions, the agents develop a self-interpretation which becomes self-esteem at the ethical level (1992, pp. 172–179). Self-esteem corresponds to the good applied to actions.

Reciprocal trust

Solicitude, as described by the good *with and for others* is the ethical phase about reciprocity, sharing and living together. Solicitude is based on the exchange between giving and receiving. Although this exchange in a friendship relationship is hypothetically equal, most often a dissymmetry appears because the initiative for the exchange comes either from the self or from the other. Based on an ethical response of benevolent spontaneity (e.g. the patient) or spontaneous compassion (e.g. the clinician), solicitude aims to establish equality in dissymmetrical conditions, the self becomes another among others. This element of similitude implies trust and belief in one's own worthiness.

Participative justice

The sense of justice is the third phase of this anterior ethics. When a relationship encompasses many citizens from a community or nation, the notion of life concerns the institutions. Institutions are defined by the structure of living together bound by common customs and not by constraining rules. The ethical aim introduces the dimension of justice as proportional equality for each. Ricœur identifies two faces of the just, one teleological towards the good and one legal towards the judicial system and the law of constraints. His anterior ethics focuses on the teleological face and concerns the sense of justice, which combines both aspects of sharing: "being part of" and "receiving a share of". This dual view precludes opposition between the individual and the society. The unjust is synonymous with

unequal, taking too many of the advantages or not enough of the burdens. This sense of justice extends equality to the entire humanity.

The normative or deontological level

The second proposition analyses the moral level (i.e. the norms), which corresponds at the ethical level to self-esteem, solicitude and sense of justice. The formalism of the norms represents the obligations, which ensure a just distance between HCS in all plots. Ricœur believes that the passage through the norm enriches the anterior ethics (1992, p. 203). Autonomy, respect for others and legitimacy of distributive justice are the dominant deontological values.

Autonomy

At the deontological level, self-respect corresponds to the ethical aim of self-esteem. Ricœur refers to deontological Kantian morality and the corresponding principle of autonomy because the same subject has both powers of giving orders, and of obeying or disobeying. Maxims are submitted to the rule of universalisation and associated with the idea of duty. Self-esteem, which does not pass the test of universalisation, is "self-love", a penchant for evil that affects the freedom to act and the capacity for being autonomous.

Respect for others

Solicitude corresponds at the moral level to respect for others and to the second Kantian imperative of persons as an end in themselves. There is a need to (re)establish reciprocity in front of the initial dissymmetry between agents and subjects, due to the exercise of power of one will over another will. The answer of moral norms is a "no", a prohibition of all the forms of evil, violence, and humiliation, whereas, at the ethical level, solicitude was affirmative in compensating the dissymmetry in self-esteems.

Legitimacy of distributive justice

Finally, at the deontological level, Ricœur considers a strictly procedural justice, as developed by John Rawls in opposition to Utilitarianism (1971). The legal face of the just is separated from the good, and rests upon the tradition of the social contract, a founding fiction that is anti-teleological. Ricœur, however, challenges the procedural justice of Rawls since the justification of equality and inequalities has no recourse to anterior ethics. For him, the fiction of the social contract is compensation for the forgotten ethical foundation of "the desire to live well with and for others in just institutions" (1992, p. 239).

"Posterior" or applied ethics

Applied ethics follows the third proposition and represents the other face of ethics, i.e. wise recourse to the ethical aim when norms face conflict in practical situations. Ricœur develops practical wisdom in order to deliberate justly at the three previous levels of the institutional environment, the plurality of persons and the universal self (1992, p. 240). Sharing in practice highlights the recourse to values of equity, confidentiality and the ability to judge wisely.

Institutional environment and equity

The rule of justice includes an element of ambiguity because of the diversity of the primary goods to be distributed. The fairest rules of justice face the issue of arbitrage between different goods that delimit different spheres of justice. The indeterminacy in political power may open the door to domination, totalitarianism and exploitation. Following Aristotle, Ricœur appeals to equity as practical wisdom in order to correct possible conflicts in the application of the rules of justice.

Plurality of persons and confidentiality

With regard to respect for others and the second Kantian imperative, conflicts can arise in the application of the universal law and the need to arbitrate between the multiple duties that pass the test of universalisation. The dissymmetry in interpersonal relations has the potential for conflicts, with a risk of arbitrariness when the idea of protection replaces the idea of respect. This distinction is complex in novel situations, such as biomedicine, where progress and technology also include an imperative of responsibility towards the future generation. Ricœur appeals to a "critical" solicitude as the form of practical wisdom in the situation of conflicting interpersonal duties.

Universal self and the ability to judge wisely

Finally, the principle of autonomy as self-legislation is subject to moral conflicts in situations in which moral judgement has to arbitrate between universal rules of morality and contextual moral values. Ricœur opts for a critical argumentative ethics and refers to Rawlsian reflective equilibrium. In posterior applied ethics, practical wisdom implies a real discussion with mutual recognition and openness to truth or to meanings that are foreign to the self. It is *recognition* that structures the ethics from self-esteem to solicitude and to justice, i.e. applied ethics is developing backwards from the idea of justice to respect for others and finally respect for *oneself as another* (1992, pp. 273–274, 280–281).

A simplified matrix for health information management based on Ricœur's ethics

Ricœur applied his "little ethics" to the medical domain by developing three levels of moral judgement: "prudential" with practical wisdom in posterior applied ethics, "deontological" at the normative level, and "reflexive" at the level of anterior ethics (Ricœur 2007, pp. 198–212). In the situation of medical practice, Ricœur's starting point for consideration is posterior ethics. He regards the relationship between suffering patients and physicians as the basis for ethical significance in bioethics (Ricœur 2007, p. 198). Ricœur further explores the dimensions of prudential judgement by comparison with judicial judgement, which involves a greater number of protagonists (2007, pp. 213–222). He recognises that the concrete act of medical decision-making involves a growing number of protagonists coming from the medical sciences or public health. New issues are raised such as "colonisation" of the medical act by rapidly advancing biologic and genetic knowledge (p. 215), or "fairness" in relation to medical costs at a population level (pp. 216–217).

This paper has used a similar approach to build an ethical matrix in the field of health information management (Table 1). The proposed ethical matrix includes the three levels of judgement from Ricœur's "little ethics" as columns: *anterior ethics* (or reflexive), *moral norms* (or deontological) and *posterior applied ethics* (or prudential). The design of the matrix integrates the second dimension of the ethical aim of the "good life, with and for others, in just institutions" aligned with the three steps of ethical considerations for stakeholders: *self, others,* and *society*.

The matrix connects HIM with Ricœur's ethics using a *Ricœurian path* of reflection. Ricœur supports a reflective process in medical judgement, for instance when he questions the link between "the request for health and the wish to live well" (2007, p. 212). An analogous parallel for HIM would question the evidence of a positive relationship between profuse health information and improved well-being. For descriptive purposes, this paper progresses through the matrix line by line. As in Ricœur's medical judgement, the HIM context of the patient-physician interaction is used as a basis for reflection, which can then be extrapolated to alternative HIM situations.

Self

The self-esteem developed with the aim of "the good life" expresses itself as the moral norm of self-respect and autonomy. Patients choose freely to participate in HIM and give up rights to their personal data. However, the practical situation is dissymmetrical, the physician having more knowledge, information and position power than the patient. Patient agency needs to be empowered, and the patient-physician alliance will develop agency, providing that there is trust on both sides. This means, in particular, that the patient trusts and follows the physician's advice, and that the physician trusts the patient's voice and tries to fill the gap of the patient's ignorance. Physicians are also increasingly accepting scrutiny of their personal work by the other participants involved in the management of health information.

In the posterior applied ethics column, HIM relies on the patient-physician pact based on trust, similar to other medical situations based on "agreement regarding trust" (Ricœur 2007, pp. 199–200). In the absence of the corresponding moral norms of self-respect and autonomy (deontological column), this trust pact is weakened, with the practical risk that patient participation in decisions regarding HIM would be neglected, and as a result the patient would feel humiliated or unable to overcome passivity. Thus, suffering patients are vulnerable to the physicians' abuse of power or failure to fulfil their expectations regarding management of their personal health information. In the anterior ethics column, the patient is considered as indivisible regarding clinical, biological, psychological, and social identities. This narrative unity stresses in turn the importance of patient agency and the roles of physicians who face the singularity of each patient in practice. The physicians' appropriate training and experience should help to overcome the dissymmetry of knowledge between them and the patients, as well as other HIM agents. More generally, health providers should be accountable for empowering patient agency and, as a result, the trust agreement would be maintained for ethical management of health information.

Others

The anterior ethical aim of solicitude as "a good life with and for others" expresses itself as the moral obligations of respect for others and benevolence, which in turn support the posterior applied values of confidentiality, patient autonomy, applications of the professional code and respect for patient rights. Practical wisdom encourages a collective narrative in the management of health information including trustworthiness between all healthcare stakeholders. The norms of reciprocity and benevolence protect those who are passive and vulnerable because of lower capacities, and justify equal consideration of others as another self.

The fragility of this medical contract comes from the difficulty of differentiating between the HIM for clinical care and the HIM for healthcare research, with research

Table 1 Ethical matrix for health information management (HIM), derived from Paul Ricœur's work (1992, 2000, 2007)

HIM healthcare stakeholders (HCS)	Anterior ethics (teleological, Aristotle)	Moral norms (deontological, Kant)	Posterior, applied ethics (to HIM)
Self	Aim at the good life:	Self-respect:	Patient–physician pact based on:
	Good as actions:	Goodwill	Trust agreement (on each side)
	Virtues	Universalisation of the moral law	Agency empowerment
	Deliberation on means to reach them	Autonomy as moral selfhood, practical reason, free choice	Levelling out dissymmetry of knowledge and respect
	Vocation	*Issues*:	Building alliance to decide and act
	Standards of excellence	Passivity within autonomy	*Fragility of the pact:*
	Good as self-esteem:	Acts not imputable to agent	Patient preferring dependency
	Narrative unity of life, narrative identity	Perversion: self-love	Clinician humiliating patient
	Self-esteem different from esteem of myself	Misuse of free choice, inclination towards evil	
Others	For and with others:	Respect for others:	Medical contract (mandate):
	Solicitude (concern for others):	Golden rule	Confidentiality, professional secrecy
	As a vital extension of self-esteem	Norm of reciprocity, benevolence	Sharing truth, collective narrative
	Friendship and reciprocity	Dissymmetry between active and passive roles	Patient information and consent
	Equal good to others as another self	*Issues:*	Professional codes, patient rights
	Sharing	Torture, violence, humiliation as destruction of others' self-respect	Trustworthiness between HCS
	Living together	Exploitation	*Fragility of the contract:*
	Benevolent spontaneity	Betrayal	Boundary between clinical care and research
	Opposed to suffering		
Society	In just institutions:	Principles of Justice:	Common good partnership:
	Living together:	*Public health laws:*	Public healthcare agency
	Participation in the life of institutions	Legal authority	Communication, dissemination, transparency
	Common mores	Legitimation	Solidarity, equity, access to care
	No split between governing and governed	*Justice:*	Concerns for missing/neglected patients
	Plurality: anonymous but irreplaceable	Equality: distributive justice	*Fragility of common good partnership:*
	Action in concert but some are forgotten	Social contract	No obligation to be healthy
	Justice:	*Issues:*	No obligation to cure
	Justice as virtue, desire for just and good actions and things	Arbitrage between legal authority and common good morality	Unreasonable expectations
	Equality: distributing as sharing and repairing	Ignorance of teleological foundation	Lack or excess of prudence
			Hurdles to sharing

requiring more stringent norms. Ricœur identifies this issue when he points out that "the human body is both a personal being and the observable object of scientific investigation as a part of nature" (2007, p. 206). Therefore, individuals can be observed as an object, and the corresponding measurements can be used independently of the donor, with the risk of misuse of health information and harmful exploitation. Following Ricœur's approach to solicitude and benevolence for and with others, practical wisdom for judgement in HIM should follow "the three rules of medical secrecy, the patient's right to the truth, and informed consent" (2007, p. 211).

Society

Solicitude is necessary for sharing data between HCS, but not always sufficient. A society with just institutions will provide equitable access to and use of health information results, as this participation is the foundation of a common morality. The theme of justice is represented in the first column of the matrix and culminates in the line "society" with the establishment of a just distance in the relationship with all other human beings. The concept of justice in society then evolves horizontally across the three columns from sense of justice, to social justice based on legislation

and procedure, to justice as equity in the face of practical problems.

A broader view than the patient–physician pact and the three prudential rules in medical judgement is required for HIM at the society level. More precise biomedical information from scientific experts changes the paradigm of medical decision-making towards a more technical approach (Ricœur 2007, pp. 214–215). Furthermore, population statistics and economics shift the decision-making process from the suffering individual to the protection and sustainability of public health according to norms of distributive justice (pp. 216–217). Justice is thus relevant at the three levels of judgement, i.e. all HCS have to be part of the governance of HIM and organise their co-existence; the legal norms should protect patient privacy and legitimate public health actions; applied ethics should ensure equity with a just sharing of burdens and a just dissemination and interpretation of health information.

Application of the ethical matrix reflection path to HIM examples

The examples described with mattering maps in "A narrative approach to health information management" section are analysed using the ethical matrix derived from Ricœur's ethics. The points of weakness that were identified in the Introduction (first paragraph) serve to identify the *ethical issues* to be reflected upon. The examples are discussed as separate cases for didactic reasons.

Trust and trustworthiness: missing patients and validity of HIM

In clinical practice, a bottom-up participation to common good would minimise the number of missing patients in research databases (*society*). Communication, trust and trustworthiness between all HCS would be encouraged, including the possibility of combining social support in the community network (*others*). The steering committees for HIM should consider field knowledge and include representatives of first-line data-collectors, patients and social communities. Drafts of publications should be shared and discussed prior to publication.

Informed consent, respect for persons' autonomy versus their questionable capacity to assimilate information: HIM and secondary uses of data

Concerning access to health information by third parties, applying the trust agreement and the medical contract as described in the matrix would solve the ethical issue of patients suffering and feeling betrayed following inappropriate use of their data and consequent infringement of their privacy. In practice, first-line physicians ought to be informed by third parties about all aspects and possible future developments of healthcare information to which they are contributing (*others*). While building trust with patients in the iterative process of consultations, the physician should also help patients reach an adequate level of comprehension and provide appropriate information concerning the current and future management of their healthcare data. As their level of HIM literacy improves, patients can aim for a status of associate, sharing decisions on the management of their health data and information with healthcare professionals (*self*).

Consent process, data sharing: issue of broad consent

As for biobanks, some hospitals have introduced broad consent covering the future use of patients' coded or de-identified health information. This means that patients are not fully informed at the time of consent since nobody can know all the future uses. The consent might be legally right, depending on the specific country of legislation context. However, Ricœur's ethical architecture supports the primacy of ethics over legislation, meaning that just institutions are not only institutions ruled by law, but are participative institutions, with shared values for just and good actions. In practical situations of conflicting judgements on consent process and data sharing, the matrix refers to the anterior ethics arbitrage based on solicitude and the sense of justice as sharing and participation. Therefore, a broad consent should require ethical reflection involving all HCS before its possible acceptation. The World Medical Association has also advocated the primacy of ethics over law and does not favour unconditional broad consent (WMA 2003, 2015).

Beneficence versus harm when providing information: personalised healthcare

In the genomics example on the return of incidental findings to patients or their family, no model for information and consent has been considered as ethically optimal. Appelbaum et al. have recommended a better education for donors. They also consider researchers to be accountable for providing this service and reducing the potential harms related to health genomics information (2014).

New medical sciences applied to personalised medicine are provoking the emergence of new biomedical patterns of sameness, disrupting a patient's/donor's self-interpretation. Narrative identity as selfhood needs to clarify one's self-understanding continuously. Furthermore, incidental findings in genomics, or screening results for early disease

detection, confirm that the narrative time is important: new findings could emerge unexpectedly in the patient/donor–physician/researcher relationship.

In the matrix, the applied ethics column supports Appelbaum's proposition, i.e. the empowerment of donor/patient agency, as well as the researchers'/physicians' responsibility for levelling out the dissymmetry of knowledge regarding genetic testing (*self*). As a result, shared decision-making is possible. The matrix challenges the usual ethical approach, in which researchers or physicians are left alone to obtain meaningful informed consent from donors or patients. The teleological aim combining *justice* and *living together* drives the legitimacy of the moral decisions for HIM in genetic testing and medical screening, and helps to match the research tempo with the common good (*society*). Moving upwards in the anterior ethics column, the sense of justice will lead to benevolent sharing with others and protecting the self-esteem of the most vulnerable. This ethical deliberation results in recognition of the specific narrative identity of each participant, who thus becomes capable of acting and deciding on genomics testing or medical screening. Furthermore, based on Ricœur's "circular" concept of narrative identity and temporality (1988, pp. 241–249), the matrix proceeds in a *Ricœurian path* of reflection and puts critical argumentative ethics on a long-term footing. This permits a settlement between the two different times of abstract findings and concrete decision-making. In practice, the ethical matrix supports the disclosure of incidental findings under conditions of benevolent reciprocity and time. It thus opens a reflection path for human governance of data-driven health management in personalised medicine.

Fairness in HIM: objectification of individuals versus new scientific advances with big data

The primacy of ethics over legislation holds for the management of health information with big data. Big data escapes the traditional narrative of medical practice, clinical research and the patient/donor–physician/researcher relationships. The "three rules of medical secrecy, the patient's right to the truth, and informed consent", as well as the concept of individual indivisibility are challenged. Moreover, the high speed of big data development requires continuous normative adaptation to legitimise their use.

In the matrix, the ethical reflection path for big data relies on the concept of justice developed in the three columns of applied posterior ethics, moral norms and anterior ethics. The sense of justice is the key element as it supports sharing, i.e. making available the sources, algorithms and results of big data, as well as repairing when findings have harmed people. The corresponding principles of social justice and the equitable dissemination of knowledge will favour a bottom-up "democratic" participation around the governance of big data. Therefore, citizen education and participation would protect patients and health providers from uncontrolled fears leading to an unreasonable principle of precaution, as well as from potential hidden coercion of public health or absence of prudence in the use or commercialization of big data. Such a democratic management of health big data could enhance the ethical reflection of HCS, increasing their self-esteem and agency, and reduce the risk of medical or public arbitrariness.

Finally, this paper has mentioned, at the end of "A narrative approach to health information management" section, the possibility that moral queries in big data could unveil innovative normative patterns in moral thinking for health information management. This could challenge the current normative principles of justice. The matrix helps to analyse the issue since procedural justice does not pre-empt the ethical construct for HIM. The process of deliberation starts at the level of posterior ethics with openness and prudence in the founding of common good. Then, normative development proceeds by adjustment using anterior ethics, gradually revising public health legitimacy and distributive justice. Moreover, the matrix sets limits in the face of a possibly misleading moral guidance of big data, with the anterior ethics column establishing a clear ethical aim. For instance, the matrix differentiates between esteem of myself (self-love) and self-esteem, and would limit excessive health demands.

In summary

The matrix derived from Ricœur's "little ethics" is an appropriate ethical framework for application to the management of health information because it emphasises patient agency, trust agreement between HCS, and justice as equal and equitable participation to the common good. Ricœur's ethics takes into account the contributions of other ethical approaches, such as the Kantian and Rawlsian theories, but ensures the primacy of anterior ethics over moral and legal norms. The recourse to anterior teleological ethics allows the possible moral conflicts to be overcome and leads to wise and shared decision-making in the management of health information in medical practice, research and public health. This model of continuous ethical reflection could be transferable to other technology-transformed healthcare activities.

Brief critical appraisal of Ricœur's ethical approach

As a result of the widely held view that he was a philosopher of great complexity, Ricœur is rarely referred to in biomedical ethics (Potvin 2010). His extensive work

is built up architecturally in successive books comprising a continuous in-depth reflection which looks for coherence between ancient and recent philosophical theories. Therefore, there is a risk of favouring only part of his work, or of disregarding it as a whole. In this paper, the focus has been placed on Ricœur's "little ethics", and some objections to this ethical approach need to be briefly addressed.

First, reference to the good life might convey the impression that Ricœur's ethics is simply about virtues and care ethics. Care takes into consideration patients' voices and desires, but usually conflicts with a depersonalised public health orientation. Although his approach has some points in common with care ethics, Ricœur does not reduce justice to friendship and equal consideration for others (Van Stichel 2014). He justifies the teleological aspect of justice by a passage through the norms of distributive justice and the political social contract. His ethical approach favours the concept of common good, rejection of injustice, and solicitude/love within the philosophical domain.

Second, the possible reproach of the is/ought fallacy could be raised. The narrative approach of HIM can be considered as a descriptive one ("is") and therefore as not having to lead directly to prescription and moral norms ("ought"). Ricœur's ethics avoids any direct connection between description and prescription when he introduces the passage by interpretation (1992, pp. 169–170). This approach is supported by his philosophical work on hermeneutics. Furthermore, there is no such thing as a pure "is", and empirical data are not only facts, but also include experiences, cultural and normative elements (Dunn and Ives 2009). This holds for HIM, with normative influences having an impact on HIM design and purpose.

Third, the choice of a teleological philosophy as anterior ethics may be challenged. Anterior ethics is "de facto" teleological. It is difficult to find alternatives. Ricœur indicates that Mill, but also Kant referred to some teleological goodwill, albeit in a soft way. Recent ethical frameworks for healthcare have introduced economic wellbeing as an ethical theory basis, justified by the need to have sustainable healthcare (Faden et al. 2013). The value is then the sustainability of something considered valuable, and refers to teleological equality as sharing with those in the future. In this example, economic wellbeing cannot pass the test of anterior ethics directly. It belongs to the moral norms.

A fourth objection could be that this overarching ethical framework is too complex and theoretical. Yet, far from being too theoretical, this ethical oversight can already be detected in the management of health information in practical fields, such as rare diseases, where patient agency, patient information and consent, physician accountability and the distinction between care and research are extensively developed (Duchange et al. 2014). Furthermore, this paper has demonstrated that the ethical matrix adapted from Ricœur's "little ethics" supports a deliberation process that can address practical issues in emergent narratives of HIM, such as those raised by personalised healthcare.

Conclusion

The ethical management of health information concerns all healthcare stakeholders, healthcare professionals, as well as patients. This paper has suggested that a narrative approach to HIM is able to connect individual and collective narrative identities. Moreover, this narrative approach has similarities with Ricœur's dual concept of narrative identity as sameness and selfhood. Using interpretation as mediation between narration and prescription, Ricœur shows the importance of moral agency, and that the capacities of acting and suffering belong to an ethical order. Ricœur's "little ethics" inspires a useful ethical framework for the management of health information, helping to prevent the tendency to reduce patients to mere data, and healthcare providers to mere data gatherers, in addition to contributing to solving moral conflicts in the healthcare information context. The ethical matrix proposed in this paper combines the dimensions of self, others and society with the dimensions of anterior ethics, moral norms and applied ethics. The dominant values of agency, trust and justice help to guide practical wisdom in managing health information.

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Compliance with ethical standards

Conflict of interest The author declares no conflict of interest.

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10. Conclusion

Narrative identity makes ethical sense of patient data

I drew upon Montello's metaphor of opera and her concept of the mattering map indicating what matters and to whom.[83] Therefore, consistently considering a patient narrative identity replaces a too Manichean view with a normal or pathologic patient status. However, Montello considers narrative ethics as the domain of literature and not normative. This position supports the difficulty of inferring prescriptive "ought" statements from descriptive "is" statements. The is-ought fallacy is regularly advocated in bioethics and prevents a direct passage from empirical facts to values. Nevertheless, on this matter a Manichean position between facts and values is also open to criticism. Based on a hermeneutical approach, Ricœur challenges this naturalistic fallacy. He uses the passage by interpretation to expose a concept of narrative identity including a responsible self, capable of thinking and acting according to values. Furthermore, he develops this narrative identity at an individual and collective level, and also in a historical perspective. Applied to patient data, Ricœur's position echoes back to my experience and intuition about a patient's data being part of his/her own story and voice, as well as contributing to a wider community. Referring back to the ethical governance of patient data, the coherence of narrative identity in the different integrated stories necessitates a common and meaningful direction. This common aim is ethics for Ricœur, and he formulates the ethical aim of *«The good life, with and for others, in just institutions».*

The governance of patient data would then target a common ethical aim for stakeholders as a priority over the operational production of patient data. This ethical aim guiding narrative identity at individual and collective levels would reconcile public interest and patient rights in the management of health information. Actually, consideration of narrative identity as in Ricœur's 'little ethics' has helped open up the ethical reflection on patient data. Far from being building blocks to construct a data warehouse, patient data instead appear as an indivisible component of the individual and collective narrative identity. This approach reconciles privacy and public interests, as each individual is potentially both a data donor and a person capable of involvement in data governance and return of information. Pursuing the orchestra metaphor, justice can be viewed as the musical arrangement creating a common harmony. Based on Ricœur's philosophy, individual rights as well as the reasons underlying public interest, should all be driven by the common "direction" of the ethical aim.

[83] Montello, M. 2014. Narrative ethics: The role of stories in bioethics, special report. *Hastings Center Special Report,* 44(1):S2–S6.

With respect to the production and use of patient data, this normative frame does not support the competing approach of patient rights and public interest. Neither does it acknowledge the divide between an ethics of care, ontologically focused on responsibility and relationships between people, and an ethics of justice focused on autonomy and individualism. Ricœur's concept of solicitude has been widely used in the ethics of care and too often restricted to a compassionate perspective or a sense of justice reduced to equal consideration for others. Ricœur has extended the concept of justice, with the idea of *The Just* also being applied to vertical approaches of legal authority, social contract and distributive justice.

This normative reflection facilitates a reframing of the ethical governance for patient data. I shall explain it in the following part V.

PART V. CONCLUSION

In this dissertation, I have defined *patient data* as the production and use of health-related data coming from healthcare and biomedical research settings, including their re-use and linkage within large patient data sets. I have identified that the underlying reasons for the public interest in patient data are numerous and contextual – research, clinics, public health, economics. Furthermore, their justification involves different theories of justice, including the recourse to reflective equilibrium where viable. I have considered that patient rights are based on human rights and human dignity, that patient privacy rights are linked to healthcare professionals' duty of confidentiality, and that rights to be informed and to self-manage consent or withdrawal are linked to respect for autonomy. Furthermore, I have used a concept of autonomy broader than mere autonomous choice.

This spectrum of definitions of public interest and patient rights made moral assessment of the degree of acceptability of overriding patient rights a challenging one. It was therefore necessary to clarify governance of patient data. I thus posed and addressed the question of *How to appraise the issues raised from the tension between patient rights and public interest in the management of large patient data sets?* With respect to the *how* question, my research involved different narrative approaches to patient data: narrative identity with Ricœur's philosophy, interpretation of interviews in the qualitative research, and case studies.

The case studies indicated that in the two practical situations of healthcare policies evaluation, and of the public health duty to protect vulnerable populations, public interest and patient rights did not appear to compete between them and both were weakened. Consequently, it was difficult to find and implement rapid and effective solutions or reparations. Large patient data sets were not appropriately developed and used.

The qualitative research showed that healthcare professionals were aware of legal and operating norms to collect and use patient data. However, it could be at the expense of patients' autonomy that they tend to limit themselves to a legal consideration of informed consent. There was a risk of tension between utilitarian advocated reasons of public interest in patient data on the one hand, and insufficient consideration of patient rights as autonomy, dignity and the capacity to share governance on the other.

From these two empirical approaches, I found that the management of patient data was not optimal when based on competition between public interest and patient rights. I found it dissonant. In narration, researchers are usually implicated in the process of interpretation and comprehension because of their underlying culture and belief. I was myself influenced by the belief that management of patient data should be good, and performed fairly with patients and citizens. Two authors in particular have supported this belief. David Wootton, acknowledging the importance of numerical data, nevertheless pointed out that: *"The chief obstacle was that doctors were satisfied with their existing therapies; the barriers to progress were psychological and cultural not intellectual."*[84] Regarding the concept of Modern Health, Jonathan Mann argued that medicine should not compete with public health, nor ethics with human rights.[85] He acknowledged a move towards more justice and more people taking responsibility for themselves, their communities and the future of the world, as there was: *"more to modern health than new scientific discoveries, or development of new technologies, or emerging or re-emerging diseases, or changes in patterns of morbidity and mortality around the world."* These two positions supported the necessity to bridge science and philosophy with wisdom in the management of patient data.

I then used narration to build a mattering map describing the management of patient data. Interpreting what matters permitted a better understanding of the roles and responsibilities of all stakeholders as agents. Agency expressed their specific narrative identity. I then developed the concept of Ricœur's narrative identity as a transition to ethics. Ricœur's approach provided an overarching framework able to make sense of the whole mattering map, a common ethical aim ensuring an appropriate, consensual governance of patient data.

I presented the three levels of medical judgement developed by Ricœur for applied ethics in the medical domain. I used a similar epistemological approach to judgement for patient data governance. I subsequently proposed a simplified Ricœur-inspired matrix which develops the three levels of judgement for the management of patient data, teleological (ethical aim), deontological (legal and moral norms) and prudential (applied ethics) at the level of each individual, his/her community and society as a whole. This matrix provides a new framework able to dispel doubt and difficulties identified in the previous competing framework for patient data management.

[84] Wootton, D. 2006. *Bad Medicine. Doctors Doing Harm Since Hippocrates*. Oxford: Oxford University Press. Paperback edition 2007, p. 284.
[85] Mann, J.M. 1997. Medicine and Public Health, Ethics and Human Rights. *Hastings Center Report,* 27(3):6-13.

11. Reframing the ethical issue

I acknowledge as a premise that there are potential benefits of large patient data sets to better cure and care for people. It is nevertheless necessary to understand the ethical management of this patient data and to suggest improvements where necessary. Based on the normative approach, I developed a new framework for an ethical governance of patient data. I shall now provide arguments and test it using the former empirical examples.

The argument is based on narrative identity and selfhood as an ethical dimension of the self. Concerning the production and use of patient data, patients and healthcare providers are actors, who can be praised or admonished. Their individual narrative identity confers self-determination and accountability to the role, and supports mediation between the theory of action and the theory of ethics. The patient's voice can be identified as a narrative unity, preventing the tendency to reduce patients to mere data donors and, by analogy, healthcare providers to mere data gatherers. Moreover, following Ricœur's philosophy advocating a shared development of the two narrative identities, personal and collective, it is possible to justify the expression of patient rights at both individual and public levels.

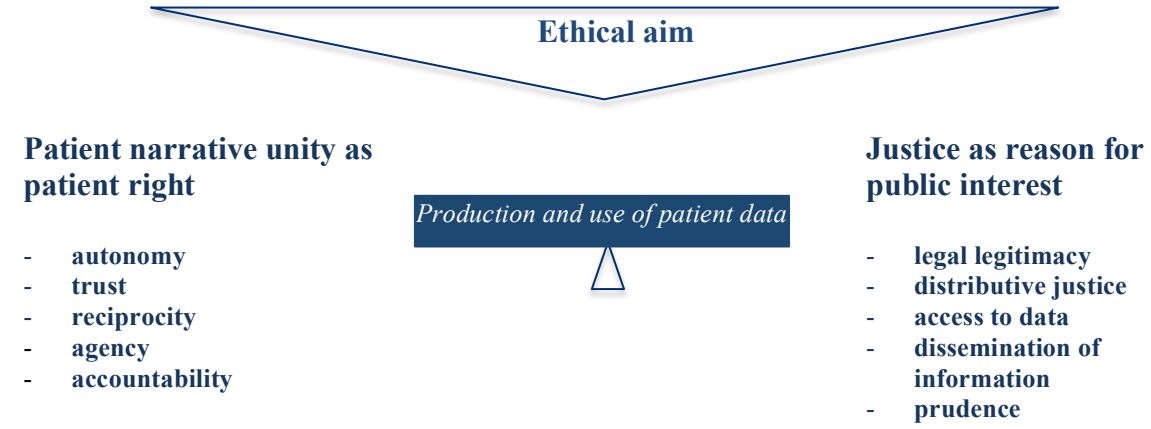
Referring back to Figure 1, the issue of the competing obligations of facilitating public interest and partially trading off patient rights, needs to be reframed as follows:

- Patient rights encompass a wider perimeter than the one defined by a principle of autonomy restricted to autonomous choice and informed consent. It is about self-esteem as virtue, and solicitude as sharing. Faced with the patient's voice as a narrative unity, other stakeholders are developing standards of excellence and benevolent sharing. At the deontological level, this ethical approach to rights is justified by respect for the norms of principled autonomy, free choice and beneficence. At the prudential level, practical wisdom helps translate moral norms into reciprocal trust between patients and physicians, respect for confidentiality and professional codes, and accountability for patient's agency empowerment.

- Reasons for public interest rely at the teleological level on the sense of justice and the participation of those governing and those governed in the life of institutions. At the deontological level, public interest is legitimised by the norms of distributive justice and social contract. Practical wisdom at the prudential level can then translate these rules into equity for accessing patient data, solidarity, transparency, dissemination of information, and prudence in sharing data and returning information.

Figure 2 illustrates this new framework which shifts from an approach of competing obligations (Figure 1) to a "Ricœurian" ethics aiming at the *good life, for and with others in just institutions*.

Figure 2: New Framework



The consensus on common good for patient data management is based on a governance process with deliberation starting at the prudential level. In the case of conflicts of norms (such as issues with data access, too much or inadequate caution in the dissemination of information or when dealing with commercial interests, patients preferring passivity rather than agency, or health providers' attitudes that humiliate patients and peers), pluralist governance will adjust the normative development using anterior teleological ethical reflection to gradually revise patient rights as well as public interest legitimacy and distributive justice.

12.Application to clinical registries

Based on this revisited ethical guidance, it is possible to re-assess the previous empirical findings in the management of patient data in clinical registries.

Swiss stakeholders' roles and responsibilities for patient data.

The thematic analysis drew upon traditional principles in bioethics as developed in the textbook of Beauchamp and Childress. Reasons for public interest were based on non-maleficence, beneficence, and respect for legal norms, and justified mainly by utilitarianism. Patient rights were limited to a respect for autonomy as self-governance towards consent. Therefore, it is not surprising that the respondents' strategy was to alleviate the burden of the informed consent. By contrast, the patients' perspective reported in the literature and by some respondents (e.g. patient association representative) has indicated that patients were expecting more information on the use of their health-related data and better opportunities to interact and share governance. This asymmetry in the perspective between patients and professionals risks creating tension and distrust between lay people and healthcare providers or representatives of public institutions.

A Ricœurian approach would be able to pre-empt this risk of tension and distrust. A tension resulting from conflicting norms of facilitating an increased use of patient data against patients' autonomy could be beneficially resolved without a competing strategy. Recourse to the teleological level of ethics would mitigate the utilitarian justification by opening up the reflection to other theories of justice and widening the concept of autonomy (see part I). The advantages would be as follows:

- Fewer conflicts of interest with potential private collaboration,
- Increased legitimacy of data collection by social contract,
- Patient rights extended to an autonomy conceived as agency, with the possibility of contributing to the governance of large patient data sets,
- Healthcare professionals' accountability for patients' empowerment and standards of excellence in the management of patient data.

As a result, transparency, sharing and trust would be strengthened between all players and within society as a whole.

The relevance of this new ethical framework for patient data was already apparent with some respondents in the qualitative study, as the closer the healthcare providers were to patients, the more they acknowledged the importance of informing patients and relying on trust in the patient-physician relationships. Moreover, a majority of respondents emphasised the need for quality and good data management. Utility was frequently advocated to justify this position, but this behaviour could also result from a professional ethos of accountability for excellence in medical and data management practice. Implementing the new framework ensures an

appropriate governance at the prudential level (applied ethics), i.e. pluralist, deliberative, informed and wise.

In the section *discussion* of the qualitative research submitted manuscript, an ethical approach based on Ricœur's philosophy has already been presented. An alternative reflective path was also suggested based on a judicial approach with the concept of the mini-constitutions of Brownsword. This approach can be revisited with the Ricœur-inspired new framework. Governance would be the place of deliberation for determining the level of flexibility for consent and withdrawal rights. Deliberation at this prudential level will be guided at the deontological level by a legal approach based on human rights. The potential separation between the two paths, Brownswordian and Ricœurian, starts at this level. For Ricœur, the concept of agency finds its justification in the concept of narrative identity with selfhood being self-esteem at a teleological approach. There is a priori no such teleological approach in Brownsword's rights perspective, although human rights are linked to human dignity. The universal declaration of human rights refers to the concept of "inherent human dignity". It is difficult to define the meaning of inherent. Depending on its interpretation from a human status, a duty, a right, or a principle to a more transcendental justice position,[86] Brownsword's position will separate from or join with Ricœur's approach.

Clinical registries and evaluation of public health policy

Conflicts of legitimacy between data from public administration and clinical registries have to be resolved at a political level. The recourse to patient rights based on narrative identity at individual, collective and historical levels would facilitate a democratic deliberation. We have reported in the qualitative research the divide between liberal and socialist perspectives in the Swiss parliament. The issue of the insufficient translation into practice of the study findings can be explained by the absence of a political will or its inefficiency in the absence of a common ethical aim.

The new framework could improve the ethical guidance under a pluralist governance and deliberation on a common aim for the registry. Whatever their purpose, clinical registries can provide benefits through better knowledge of diseases, quality improvements in health services, evaluation of treatments and assessment of the appropriateness of public policy. As they have perpetual difficulties to include sufficient participant numbers, involving patients and civil society could improve recruitment and confer value to the registries. The recourse to

[86] Düwel, M. 2014. Human dignity : concepts, discussions, philosophical perspectives. In *The Cambridge Handbook of Human Dignity, Interdisciplinary Perspectives*. Cambridge: Cambridge University Press, pp. 23-49.

a common ethical aim inspired by Ricœur (and subsequently developing excellence in clinical practice, avoiding patient humiliation, empowering their capability to participate and sharing data for an agreed registry purpose) would resolve most of the issues of data sharing, patients' passivity and a low rate of inclusion.

Pregnancy registries and antiepileptic treatment

The application of the new framework is equally valid to this case study, in order to: i) alleviate the absence of pluralist governance; ii) improve the collection of data and data sharing; iii) facilitate communication, transparency and accountability between the different healthcare providers; iv) educate and inform pregnant women and their families. I will further develop the issue of political accountability to disseminate appropriate and timely information, and also the necessity to have a long-term follow-up of the families.

At the end of volume 3 of *Time and Narrative*, Ricœur developed an in-depth philosophical reflection on the aporia of the unrepresentability of time in narration, and consequently introduced in his argument the theme of intentionality.[87] The case study shows the lack of congruence between narration and temporalities, the epileptic women in turn being of childbearing age, in the pregnancy period, potentially suffering from a miscarriage or becoming the mother of a disabled child. The time representations differ, for example linear when waiting for the delivery, or suspended "not-narrative" following a miscarriage. In the absence of the political intention to act and protect women and their children, a scandal like the one with valproate will reoccur and again harm women, children and their families.

Indeed, the new framework is not just an aid to help think and perform ethically in medical situations. Its ethical impact extends throughout the legal, social and political domains. Faced with new technology, commercial or social pressures, there is a need to better educate people, to adapt the academic and professional curriculum of healthcare professionals, to develop effective communication and conditions for data sharing, and finally to have the political will or intentionality to act. The new framework of narrative identity unity as patient rights, and of justice as the reason for public interest, promotes the capability to judge and act.

The next chapter will offer some food for thought in order to implement the new framework.

[87] Ricœur, P. 1988. *Time and Narratives Vol. 3* (trans: McLaughlin, K. and Pellauer, D.). Chicago and London: The University of Chicago Press, pp. 351-352, 374-392. Originally published as *Temps et Récit vol. 3*, 1985. Paris: Editions du Seuil.

13. Implementation strategy

Bioethics is required to provide positions or recommendations in different medical and biomedical situations. It is always hard to move from an ethical framework to guidelines and practical measures, and this issue also applies to the ethical governance of patient data, and large patient data sets. It has already been noted that the translation of research findings was often insufficient in practice. Faced with this challenge, I propose combining the two principles of *imputability* and *intentionality*. I have already explained the necessity of intentionality and political will in the previous example. The concept of narrative identity and agency makes each stakeholder a capable being, able to think and to act, and thus to be accountable for his/her actions. Ricœur names *imputability* as this accountability for his/her own action.[88] The association of intentionality and imputability would thus support the implementation of the new ethical framework by the different stakeholders and institutional organisations.

I will consider the general case of the ethical management of patient data in a modern digitalised healthcare system, and thereafter a list of specific applications in the Swiss context.

It is widely acknowledged that digitalisation is changing society and also the healthcare system. Numerous projects and digital investments are being undertaken to integrate, standardise and use patient data with security and confidentiality. ELSI groups are working to secure the ethical treatment of the data. Most of the patient data collected in a well-defined and controlled way originates from the patient-physician relationship. At the other end of the spectrum, the use and re-use of this data fall within the domain of algorithms and data mining sciences.[89] I consider that these two phases are the essential places for the implementation of the new framework for patient data, ensuring the conditions for an ethical, pluralist governance of patient data.

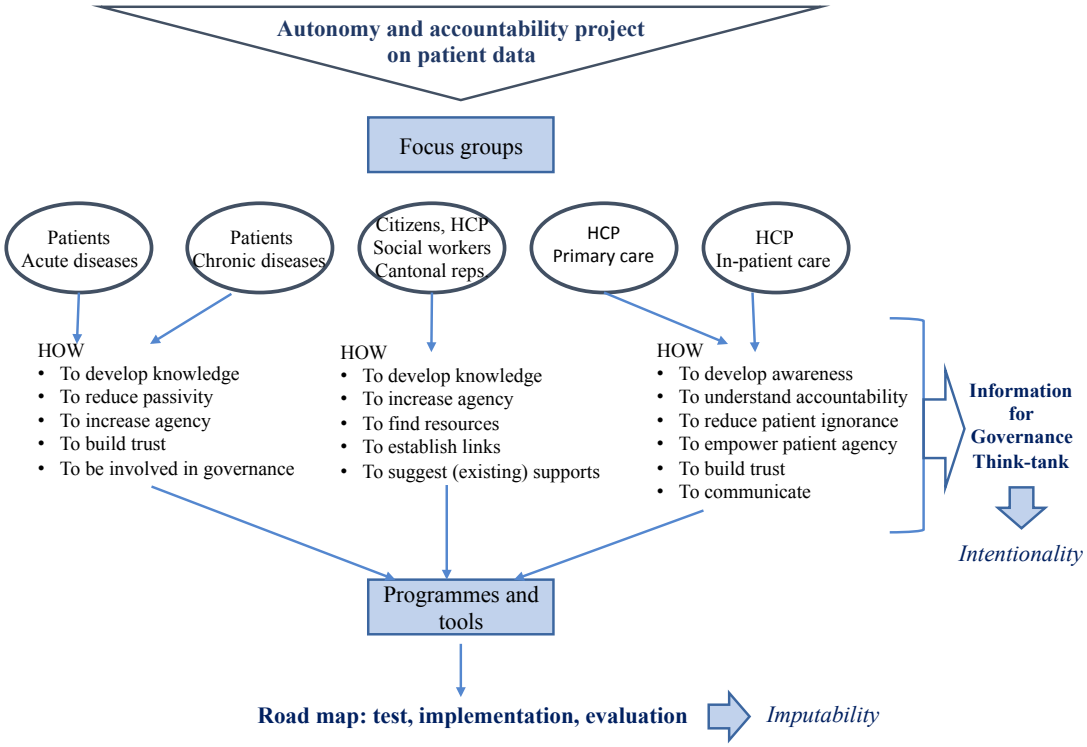
Patient data in the patient-physician relationship

From an academic perspective, implementation will seek to obtain empirical information on what is meant by autonomy, agency and trust for patients, and how they could overcome ignorance or passivity. Similarly, empirical data will be required on reciprocity,

[88] Ricœur, P. 2007. *Reflections on The Just* (trans: Pellauer, D.). Chicago and London: The University of Chicago Press, p. 2. Originally published as *Le Juste 2*. 2001. Paris: Editions Esprit.
[89] Obermeyer, Z., Emanuel, E.J. 2016. Predicting the future — Big data, machine learning, and clinical medicine. *New England Journal of Medicine,* 375:1216-1219.

accountability, and the patient's empowerment for the physicians and clinical teams interacting with the patient. Data would be collected in focus groups of patients, clinicians and mixes of both. (Figure 3). The process is bottom-up, pragmatic, promoting better relationships between patients, healthcare professionals and the community, and as a result building trust. It is not about testing top-down social-psychological tools of patient activation. Education programmes around patient data could then be designed, tested, proposed and assessed in the settings of citizen schools, undergraduate medical education at the university and further education for healthcare providers. Promoting *imputability* is the driving factor at this patient-physician level.

Figure 3: Enhancing stakeholders' ethical awareness and accountability



In part I, the possibility to develop patient positive claims to have full, transparent information on their data destiny, as well as the possibility to intervene have been mentioned as a new concept of data ownership in order to fight the potential feeling of data despoliation. Imputability is corollary to these possible developments.

Algorithms and use of data

Similarly, it will be necessary to obtain empirical data on governance and decision-making systems of the projects requiring use of patient data. Academics should thus participate in the consultation process and pluralist governance of these projects in order to evaluate and facilitate fair access to data and algorithms, as well as the conditions of data dissemination. Governments should promote the involvement of think-tanks or other forms of research groups able to support ethical deliberation on patient data projects. Influencing *Intentionality* is the driving factor at this practical governance level.

I have noticed that in most conferences on big data, personalised medicine or genomics, organisers and speakers focus on the expert technical and legal aspects of systems, shared data networks, data standardisation, data security. The proposed new framework counterbalances these limited approaches by considering that people and governance should first concentrate on the common good and related coherent projects. The systems would be subsequently adjusted to projects. I have called this approach "integrative" (manuscript in preparation).

14. Proposed examples of actions for implementation

The following projects would integrate the results of the strategy above.

Projects promoting imputability

- ✓ Add a lecture on patient data to the bioethics course in the student medical curriculum
- ✓ Design a school programme on health-related data for teenagers
- ✓ Organise an ethics café with community citizens on the issue of patient data
- ✓ Design and propose conference materials for patient associations

Projects targeting intentionality

- ✓ The Swiss Federal Act on Electronic Patient Files (RS 816.1), defines the community as the organisational unit of health professionals and their institutions (art. 2, para. d). I propose including representatives of the civil society and patient associations.

- ✓ With regard to the Swiss national consultation on a proposed general consent for the secondary used of patient data and samples, I propose the following amendments:
  - do not allow the transfer of patient data to the pharmaceuticals industry without formal informed consent,
  - explain better the difference between research biobank and therapeutic biobank,
  - provide more detailed information to avoid the problem of therapeutic misconception,
  - explain better the coding process for genetic data and the conditions for the return of information,
  - introduce a governance separate from the ethical research committee able to assess in the name of patients their rights and the relevance of the research for future projects,
  - organise a website and patient material to update patients on projects and findings from biobank and related data sets.

- ✓ Create a think-tank working on the ethical issues of private-public partnerships around patient data.

  Patient data is increasingly sought by pharmaceuticals and biotechnology companies for developing targeted treatments, especially in the domain of genomics medicine.[90] Private companies and public institutions have the stewardship or ownership of extensive data sets. All this health-related data could be regrouped in a common library. Library governance and maintenance would need to be organised with a just distribution of burden and benefit. Similarly, data access and data outcomes, including patents and commercial exploitation, would require regulation. Patients and citizens should be integrated into the process as it concerns their data, and the healthcare system they want, finance and use. The task of the think-tank would be to consider all the ethical, legal and scientific aspects, and help all stakeholders to understand each other and collaborate.

Conclusion

As commercial organisations are offering ever more health tests and products for preventing disease and/or maintaining or recovering a healthy status, they also have the potential to distort private-public partnerships. I assumed at the beginning of my dissertation that healthcare digitalisation and modern management of large patient data sets would bring social benefits. The quantity of data and the emergence of possible new health/disease correlations

[90] Rockhold F, Nisen P, Freeman A. 2016. Data sharing at a crossroads. *New England Journal of Medicine* 375(12):1115-7.

could a contrario be factors leading to excessive medicalisation and overdiagnosis.[91] The risk is that the morally good use of large patient data sets for the purpose of safer, precise medicine and targeted treatment could lead to inappropriate treatment (morally wrong).[92] Some healthcare stakeholders have already identified the risk of too much medicine. The "information paradox" would result in a situation where the patient's voice could disappear behind patient data. The patient's voice is about "who I am" and not only "what I am". This can evoke the modern claim "not in my name" that could also concern patients, as physicians may reserve the right to speak in the name of their patients.[93] In Ricœur's concept of narrative identity "Who I am" is about selfhood. On a legal side, listening to "who I am" could correspond to the non-compromisable human conditions to be respected in all projects using and sharing patient data.[94] Professor Kieran Sweeney, reporting a patient's journey, concludes:

> *What I have always feared in illness was anonymity, being packaged, losing control, not being able to say "this is who I am."*[95]

* * *

[91] Hofmann, B. 2016. Medicalization and overdiagnosis: different but alike. *Medicine, Health Care and Philosophy*, 19:253-264.
[92] Mouton Dorey, C. 2016. Conference proceedings. *Preventing Overdiagnosis 2016 Barcelonna*. www.preventingoverdiagnosis.net/2016Presentations/Corine_Mouton_Dorey.pdf. Accessed 20 May 2017.
[93] Biller-Andorno, N. 2016. Overdiagnosis in the name of the patient – breaking the vicious circle. *Key note lecture at the international conference Preventing Overdiagnosis 2016 Barcelona* (see note 90).
[94] Brownsword,R. 2016. *Oral presentation on* Data Commons and Data Ownership*, at the symposium on Digital Health: Exploring Ethics and Policy*. Zürich.
[95] Sweeney, K. 2009. Mesothelioma. *BMJ*, 339:511-512.

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1991-1993	London Business School, **London**: **MBA** full-time
2010- 2012	Master of advanced studies **MAS in Health Law**, Institute of health Law, University of **Neuchâtel**
2012- 2017	Institute of biomedical Ethics, University of **Zurich**: **PhD in biomedical ethics and law**

MEBEKO

Attestations de reconnaissance
Diplôme de médecin: December 2, 2007
Postgrade fédéral spécialiste en cardiologie: March 4, 2008

BUSINESS EXPERIENCE

1985-1989 **Cardiologist, Grenoble, France**
University Hospital**:** Cardiology and intensive care units.
Medical Faculty: Teaching medical student years 4, 5 and 6.
Rehabilitation centre in cardiology: consultant.
From June 1987, additionally part-time private practice.

1989-1991 **Smithkline Beecham Pharmaceuticals, Paris, France**
Medical Manager for Cardiovascular Products, Phases IIIB and IV.

1991-1993 **Internships during the MBA programme,London, U.K.**
LBS Financial Software, London (3 months)
Wellcome Foundation Ltd, Beckenham (3 months)

1994-2000 **Roussel Uclaf / Hoechst Marion Roussel/ Aventis**

1994-Jun.95 Houdé Laboratoires. Roussel Uclaf, Paris La Défense. France
Medical Manager for Cardio-vascular Products, phases I, II and III.

JuI.95-Dec.96 Roussel Uclaf Group. Romainville. France
Evaluation of R&D projects in cardiovascular and immunology domains.

Jan.97 -Sept.98 Hoechst Marion Roussel (HMR). Frankfurt Headquarters, Germany.
Finance Director in the HMR Research Leadership Team managing research (India, Japan, France, Germany and the U.S.A), alliances and investments in genomics and nanotechnology.
Project leader for the drug innovation and approval "DIA" financial "Reliance" project of re-engineering of R&D into DIA.

Oct.98-Dec.99 Hoechst Marion Roussel (HMR) and Aventis. Romainville. France
Finance co-ordinator for Aventis R&D: USA, Germany, France, England, India.
Finance and administrative director for R&D, HMR France.

Apr. 05- Jun.07 **Laboratory for Human Nutrition, ETHZ, Zürich, Pr. Zimmermann**
Project leader: Swiss national study on Iodine (24 centres, 700 infants).

2007-2010 **Freelance worker in bioethics:** Work on Pre-implantation genetic diagnosis

Jan. 11- Dec. 13 **Zurich University-Institute of Social and Preventive Medicine: 50%**
Project manager for the study of "the impact of Swiss-DRGs on evidence based medicine" (part D of the "IDoC" project of the IBME, financed by the Swiss National Science foundation).

Aug.12- Oct.17 **Institute of biomedical Ethics, university of Zurich**
PhD Research on ethical issues governing patient data sets, health information management the in the healthcare system.
Grant from the fond KZS (SAMW).